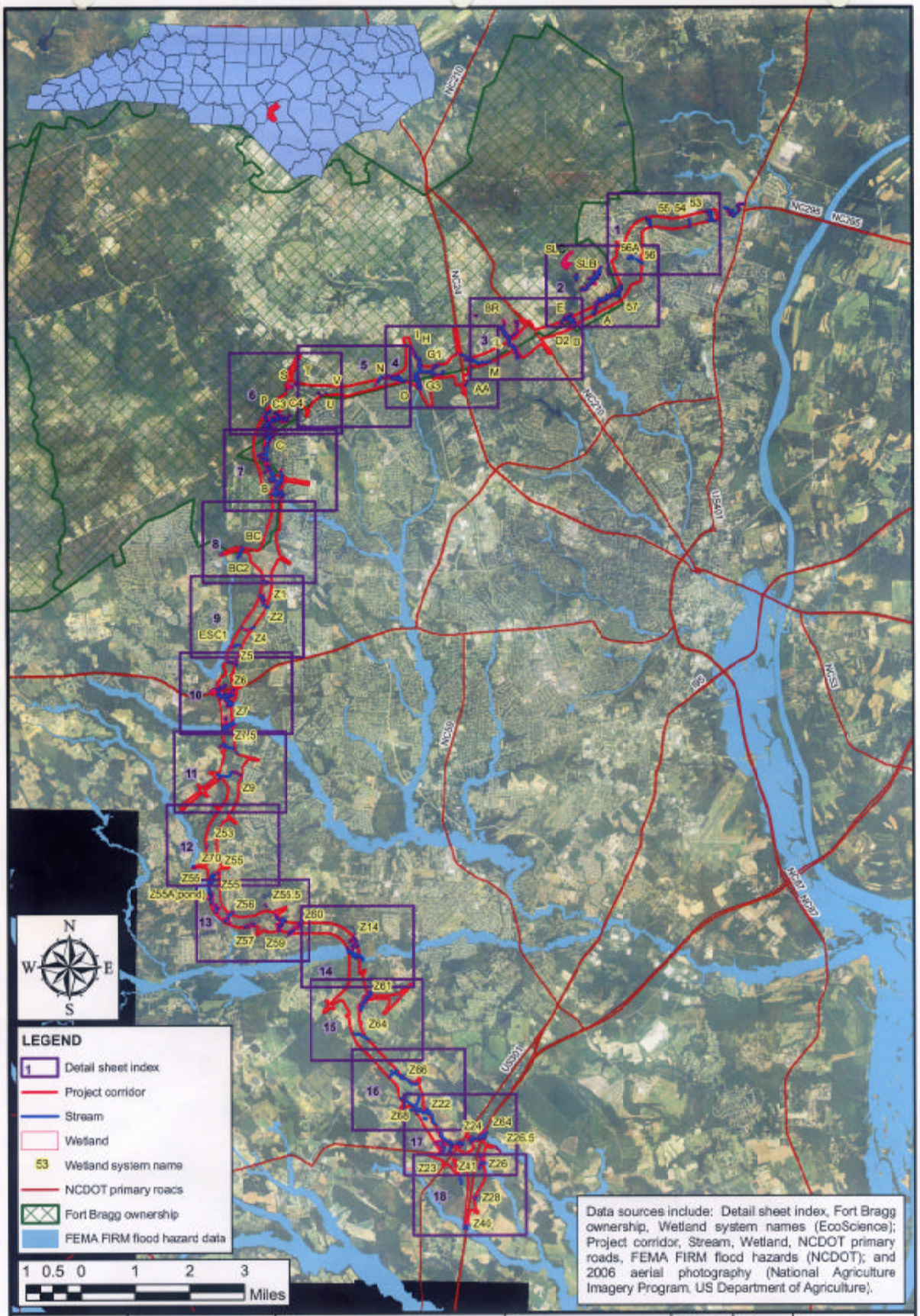
NCDOT TIP/Section	NCDOT Wetland Site	ESC Sheet No.	ESC System Number	NC WAM Wetland Type	Assessment Area Size	Hydrology Sub-Function	Water Quality Sub-Function (Condition)	Water Quality Sub-Function (Modified Condition)	Water Quality (Opportunity Presence?)	Habitat Sub-Function	Overall Wetland Quality	USACE type	NCWAM type	Proposed Impact
X-0002C	Site 6	1	53-I-WAM-01	Headwater Wetland	6	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	fill
X-0002C	Site 5	1	54-I-WAM-01	Riverine Swamp Forest	0.61	HIGH	HIGH	HIGH	NO	HIGH	1 HIGH	N	R	fill
X-0002C	Site 5	1	54-I-WAM-02	Non-Tidal Freshwater Marsh	0.23	HIGH	HIGH	X	X	HIGH	1 HIGH	N	R	fill
X-0002C	Site 5	1	54-I-WAM-03	Seep	0.69	HIGH	HIGH	X	X	HIGH	1 HIGH	N	N	fill
X-0002C	Site 4	1	55-I-WAM-01	Seep	0.36	HIGH	HIGH	X	X	HIGH	1 HIGH	R	N	fill
X-0002C	Site 4	1	55-I-WAM-02	Seep	0.55	LOW	LOW	X	X	LOW	3 LOW	R	N	bridged
X-0002C	Site 4	1	55-I-WAM-03	Bottomland Hardwood Forest	2.54	HIGH	HIGH	HIGH	YES	LOW	1 HIGH	R	R	bridged
X-0002C	Site 2	2	57-I-WAM-01	Headwater Wetland	8.41	HIGH	MEDIUM	HIGH	YES	HIGH	1 HIGH	N	R	fill
X-0002C	Site 1	2	A-I-WAM-01	Riverine Swamp Forest	3.17	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
X-0002B	Site 3	2,3	D-I-WAM-01	Riverine Swamp Forest	13.17	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	R	R	bridged
X-0002B	Sites 1a-c	3	L-I-WAM-01	Riverine Swamp Forest	6.17	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	bridged
U-2519E	Sites 2, 3	3,4	M-I-WAM-01	Headwater Wetland	4.76	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519E	Site 4	4	G2-I-WAM-01	Headwater Wetland	5.14	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519DA	Site 4	4	G2-I-WAM-02	Headwater Wetland	3.84	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519DA	Site 4	4	G2-I-WAM-03	Riverine Swamp Forest	6.27	MEDIUM	HIGH	HIGH	YES	MEDIUM	1 HIGH	R	R	fill
U-2519DA	Site 5	4	G3-I-WAM-01	Riverine Swamp Forest	7.17	MEDIUM	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519DA	Site 3	4	G3-I-WAM-02	Non-Tidal Freshwater Marsh	4.5	HIGH	HIGH	X	X	HIGH	1 HIGH	R	R	fill
U-2519DA	Sites 1, 2	4,5	O-I-WAM-01	Riverine Swamp Forest	13.01	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	R	R	fill
U-2519DA	? 15+50	5	N-I-WAM-01	Riverine Swamp Forest	1.09	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	N	R	fill
U-2519CB	Site 3	6	T-I-WAM-01	Headwater Wetland	0.21	LOW	MEDIUM	HIGH	YES	MEDIUM	2 MEDIUM	N	R	fill
U-2519CA	Site 6	9	Z1-II-WAM-03	Headwater Wetland	2.09	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	N	R	fill
U-2519CA	Site 5	9	Z2-II-WAM-04	Riverine Swamp Forest	1.75	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	fill
U-2519CA	Site 4	9	Z4-II-WAM-08	Headwater Wetland	0.57	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	fill
U-2519CA	? ~670+50	9	ESC1-II-WAM-05	Headwater Wetland	0.1	LOW	MEDIUM	HIGH	YES	LOW	3 LOW		R	fill
U-2519CA	? ~670+50	9	ESC1-II-WAM-06	Headwater Wetland	0.25	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH		R	fill
U-2519CA	Site 3	10	Z5-II-WAM-09	Headwater Wetland	2.97	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	bridged
U-2519CA	Site 2	10	Z6-II-WAM-20	Bottomland Hardwood Forest	1.07	HIGH	HIGH	HIGH	YES	LOW	1 HIGH	R	R	fill
U-2519CA	Site 2	10	Z6-II-WAM-19	Seep	2.41	HIGH	HIGH	X	X	HIGH	1 HIGH	R	N	fill
U-2519CA	Site 2	10	Z6-II-WAM-10	Bottomland Hardwood Forest	13.47	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519CA	Site 2	10	Z6-II-WAM-12	Seep	0.48	HIGH	HIGH	X	X	HIGH	1 HIGH	R	N	fill
U-2519CA	Site 2	10	Z6-II-WAM-13	Headwater Wetland	0.79	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	N	fill

Legend	
	High quality wetland
	Medium quality wetland
	Low quality wetland
	USACE and NC WAM riverine vs non-riverine call inconsistent



EcoScience Corporation

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Project Overview

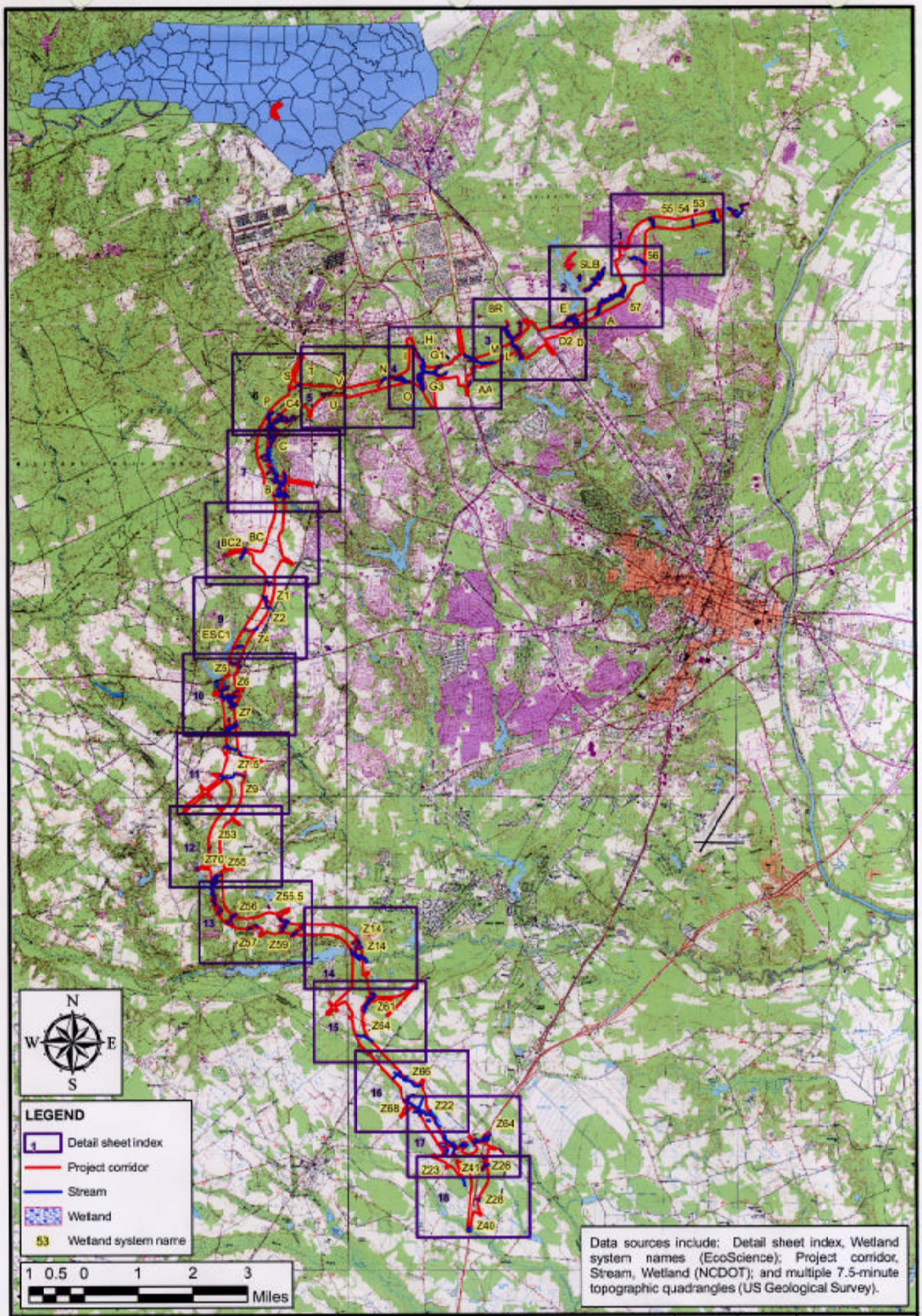
Drawn By: BDD | Chkd By: APS

Date: SEP 2007

Scale: 1:100,000

ESC Project No: 06-268

FIGURE A



EcoScience Corporation
Raleigh, North Carolina

FAYETTEVILLE OUTER LOOP

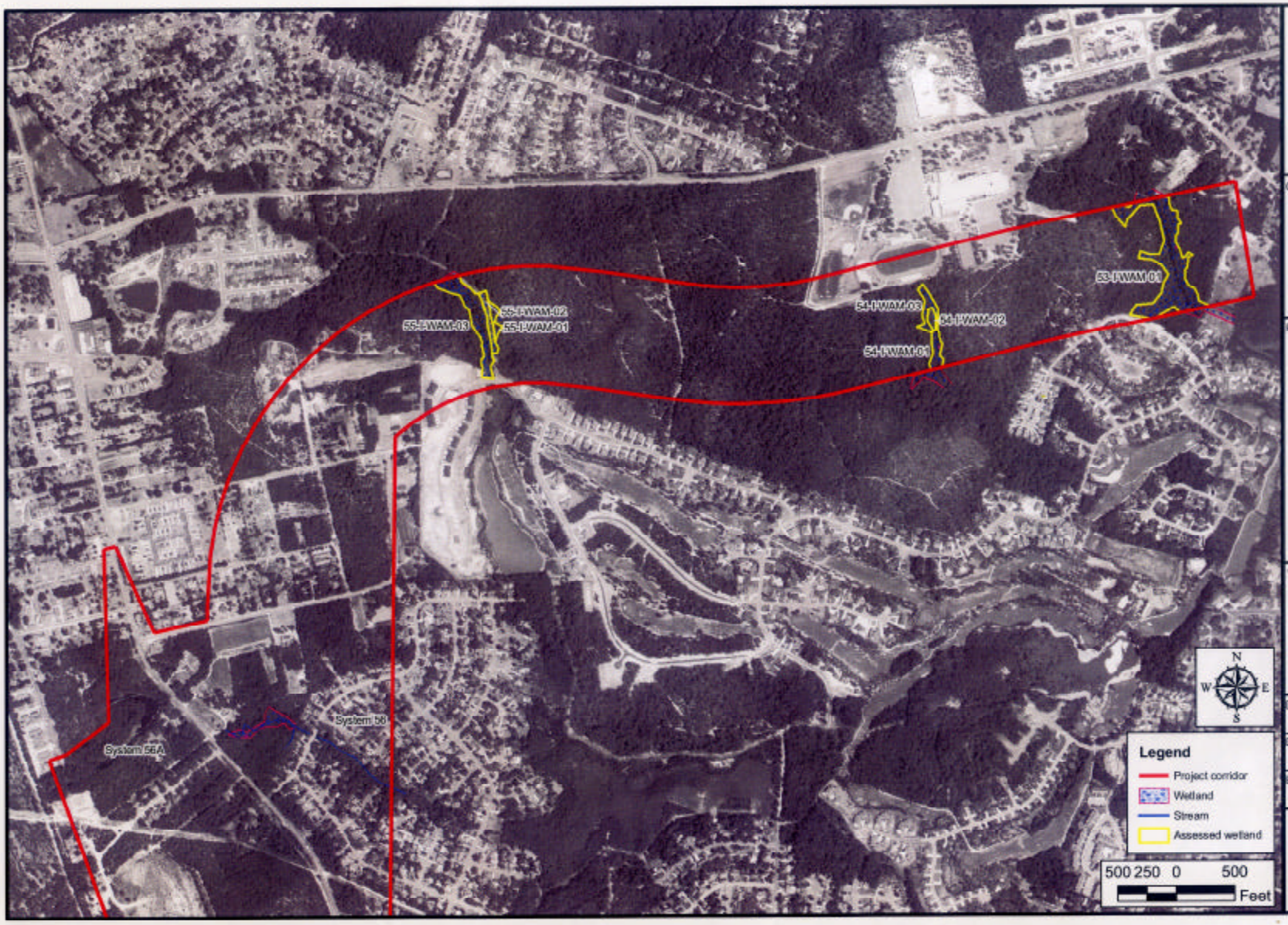
WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Project Overview

Drawn By: SSD
Chkd By: APB
Date: SEP 2007
Scale: 1:100,000
ESC Project No. 05-205

FIGURE B



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

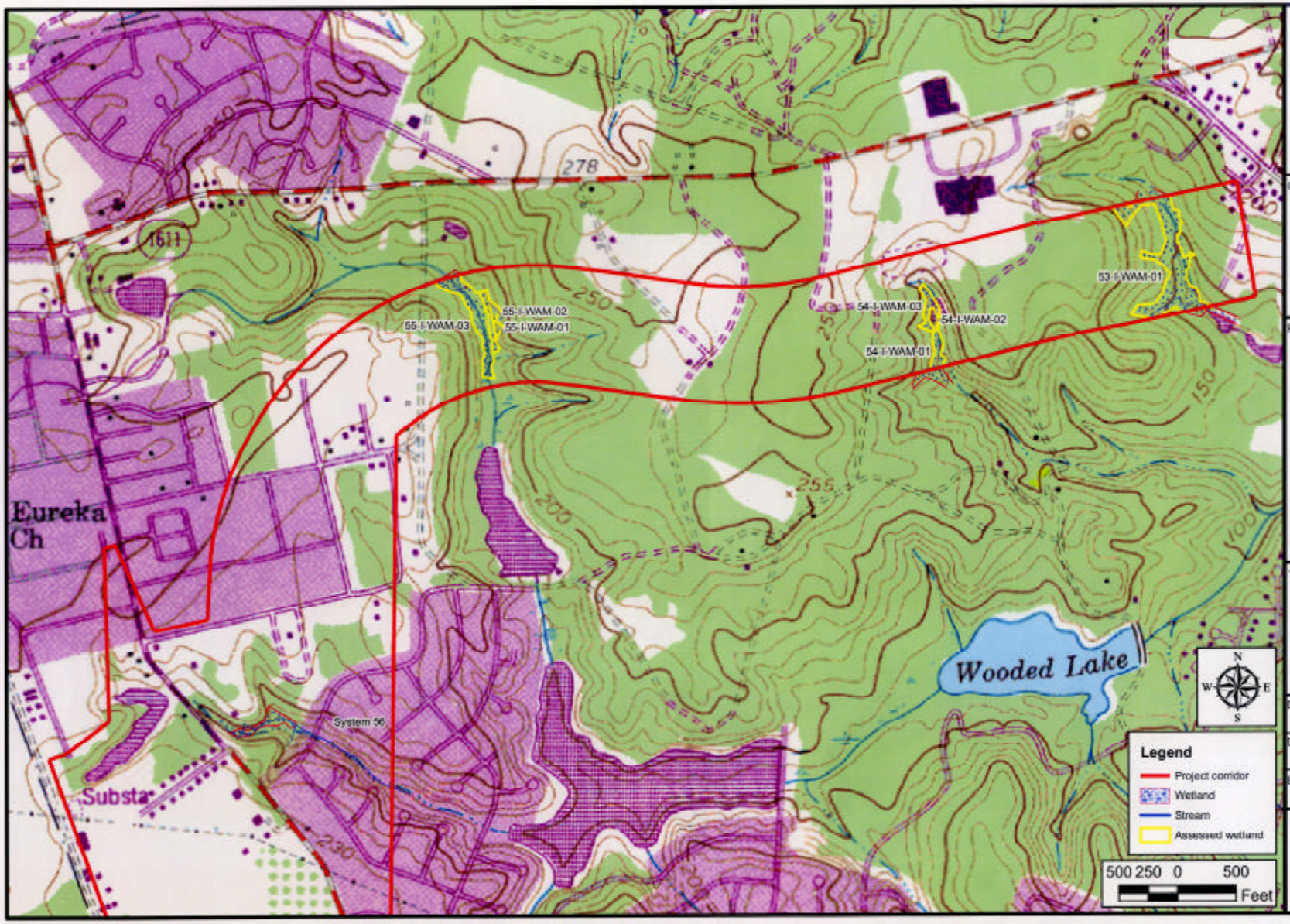
Wetland Locations

Dwn By:	Chd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

1



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

1

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	54-I-WAM01	**Date**	9/6/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA ESC
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Falls Creek, Wooded Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.151326, -78.887395

Evidence of stressors affecting the assessment area (may not be within the assessment area)

Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.

Regulatory Considerations

Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☒B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☒B	☒B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☒N	☒N	☒N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☒D	☒D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☐A Sediment deposition is not excessive, but at approximately natural levels.
☒B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☐F	From 5 to < 10 acres
☒G	☐G	☒G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☒B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☒A	☒A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

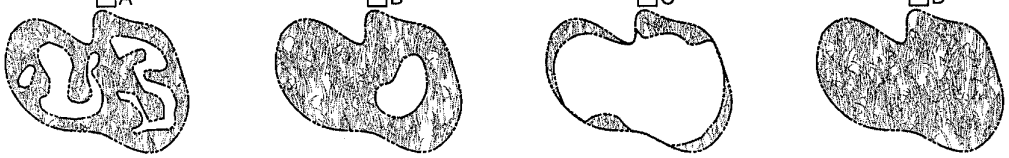
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. Habitat Uniqueness – **wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	54-I-WAM01	Date of Assessment	9/6/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA ESC

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**MEDIUM**
Water Quality	Pathogen Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Particulate Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Soluble Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**NO**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	53-I-WAM01	**Date**	9/6/07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	AS, RA / EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Falls Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.152096, -78.879960

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Sewer lien right of way adjacent to wetland

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☒B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☐A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☒B	☒B	☒B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☒F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☒I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☒No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☒B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.

☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.

☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

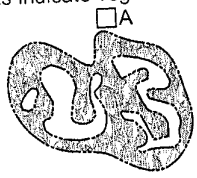
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.
☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

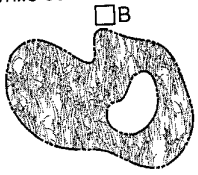
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

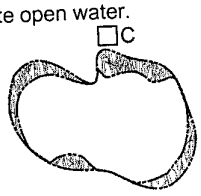
☐A



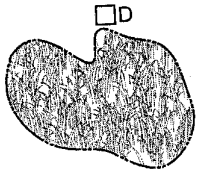
☐B



☐C



☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	53-I-NCWAM01	Date of Assessment	9/6/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA / EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**MEDIUM**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	54-I-WAM02	**Date**	9/6/07
Wetland Type	Non-Tidal Freshwater Marsh	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Falls Creek, Wooded Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.151839, -78.887505

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☒ Yes ☐ No

Describe effects of stressors that are present.
Long standing, man made dam source of hydrology, near school property

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☒A	☒A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☒N	☒N	☒N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☒C	☒C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☐F	From 5 to < 10 acres
☐G	☐G	☒G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☒I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☒Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☒No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☒A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

☒A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☒A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

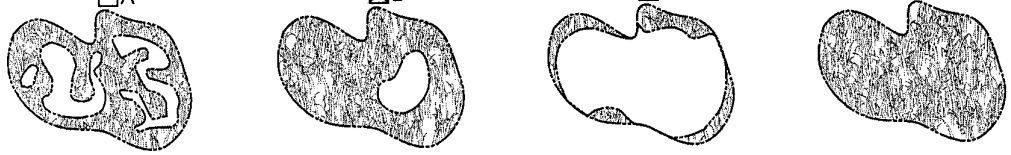
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☒B ☐C ☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Inundated during drought

NC WAM Wetland Rating Sheet

Wetland Site Name	54INCWAM02	Date of Assessment	9/6/07
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	YES
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	54-I-WAM03	**Date**	9/6/07
Wetland Type	Seep	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Falls Creek, Wooded Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ **Yes** ☒ **No**	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.152268, -78.887746

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Adjacent to school football field

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☐ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☒E	☒E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☒N	☒N	☒N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☐A	≥100 feet
☐B	☒B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☒E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☐F	From 5 to < 10 acres
☐G	☐G	☒G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☒I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☒No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☒A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☒C	☒C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

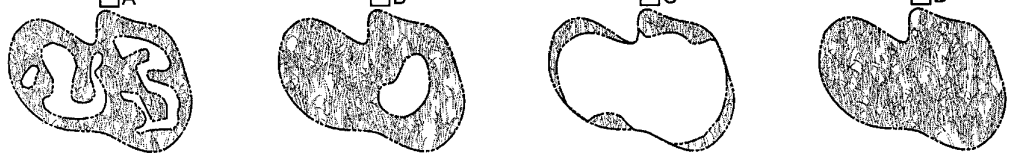
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	54INCWAM02	Date of Assessment	9/6/07
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	YES
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	55-I-WAM01	**Date**	9/6/07
Wetland Type	Seep	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Wooded Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.151569, -78.899939

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☐ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☒E	☒E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☒B	☒B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☒A	☐A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☒F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☒B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☒E	☒E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☒I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☒No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☒C	☒C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

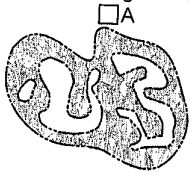
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

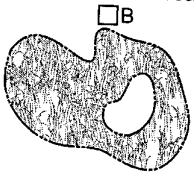
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

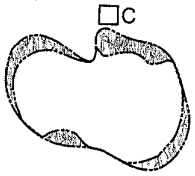
☐A



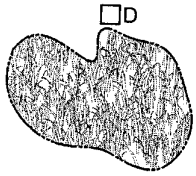
☐B



☐C



☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	55-I-WAM01	Date of Assessment	9/6/07
Wetland Type	Seep	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	55-I-WAM02	**Date**	9/6/07
Wetland Type	Seep	**Assessor Name/Organization**	ESC (AS, RA)
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Wooded Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	-48.900080, 35.151560

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☒ Yes ☐ No

Describe effects of stressors that are present.
Clear-cut and mowed sewerline corridor. Foul odor suggest possible discharge.

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☐ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☐A	☐A	Not severely altered
☒B	☒B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☐A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☒C	☒C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☐A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☐A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☒E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☒F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☒I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

- ☐A Wetland type is the full extent (≥90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- ☐Yes ☐No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- ☐Yes ☒No Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☐B No artificial edge within 150 feet in four to seven directions
- ☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ☒C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☐ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☒C	☒C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☒C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

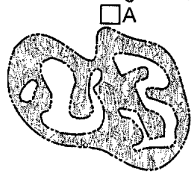
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

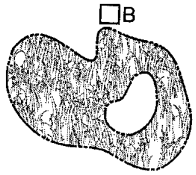
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

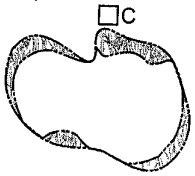
☐A



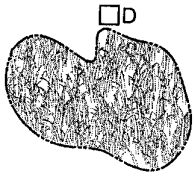
☐B



☐C



☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	55-I-NCWAM02	Date of Assessment	9/6/07
Wetland Type	Seep	Assessor Name/Organization	ESC (AS, RA)

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	YES
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**LOW**
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**LOW**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**LOW**
Water Quality	Condition	**LOW**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**LOW**

Overall Wetland Rating **LOW**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	55-I-WAM03	**Date**	9/6/07
Wetland Type	Bottomland Hardwood Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Wooded Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.151428, -78.900251

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
New neighborhoods upstream; sewerline possibly overflows

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☒C	☒C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☐A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☒B	☒B	☒B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☒E	☒E	From 10 to < 25 acres
☒F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

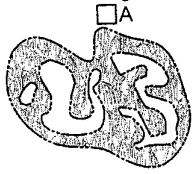
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

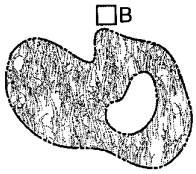
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A

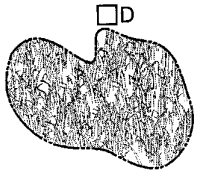


☐B



☐C

☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	55-I-WAM03	Date of Assessment	9/6/07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

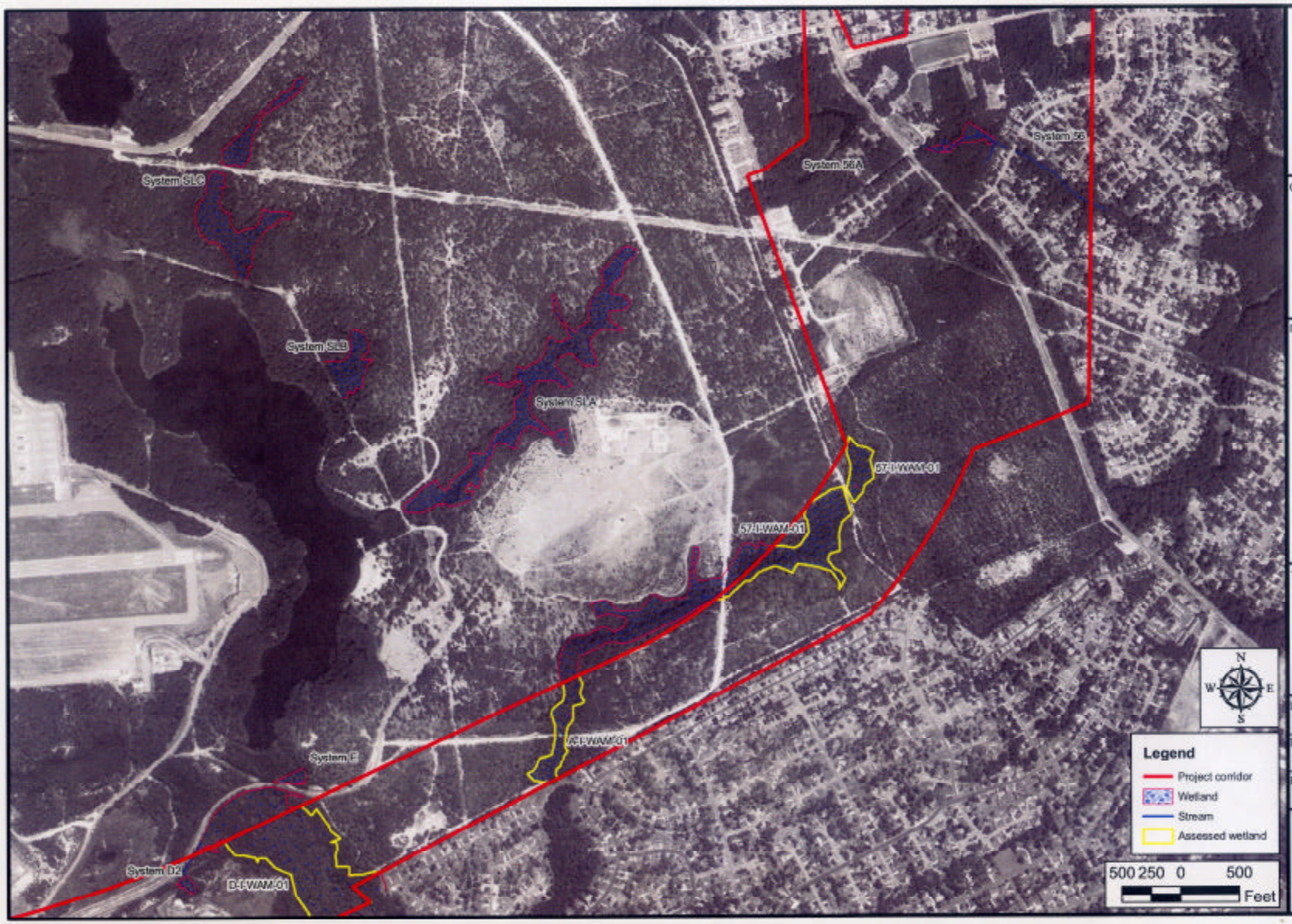
Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**LOW**
	Vegetation Composition	Condition	**LOW**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**LOW**

Overall Wetland Rating **HIGH**



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

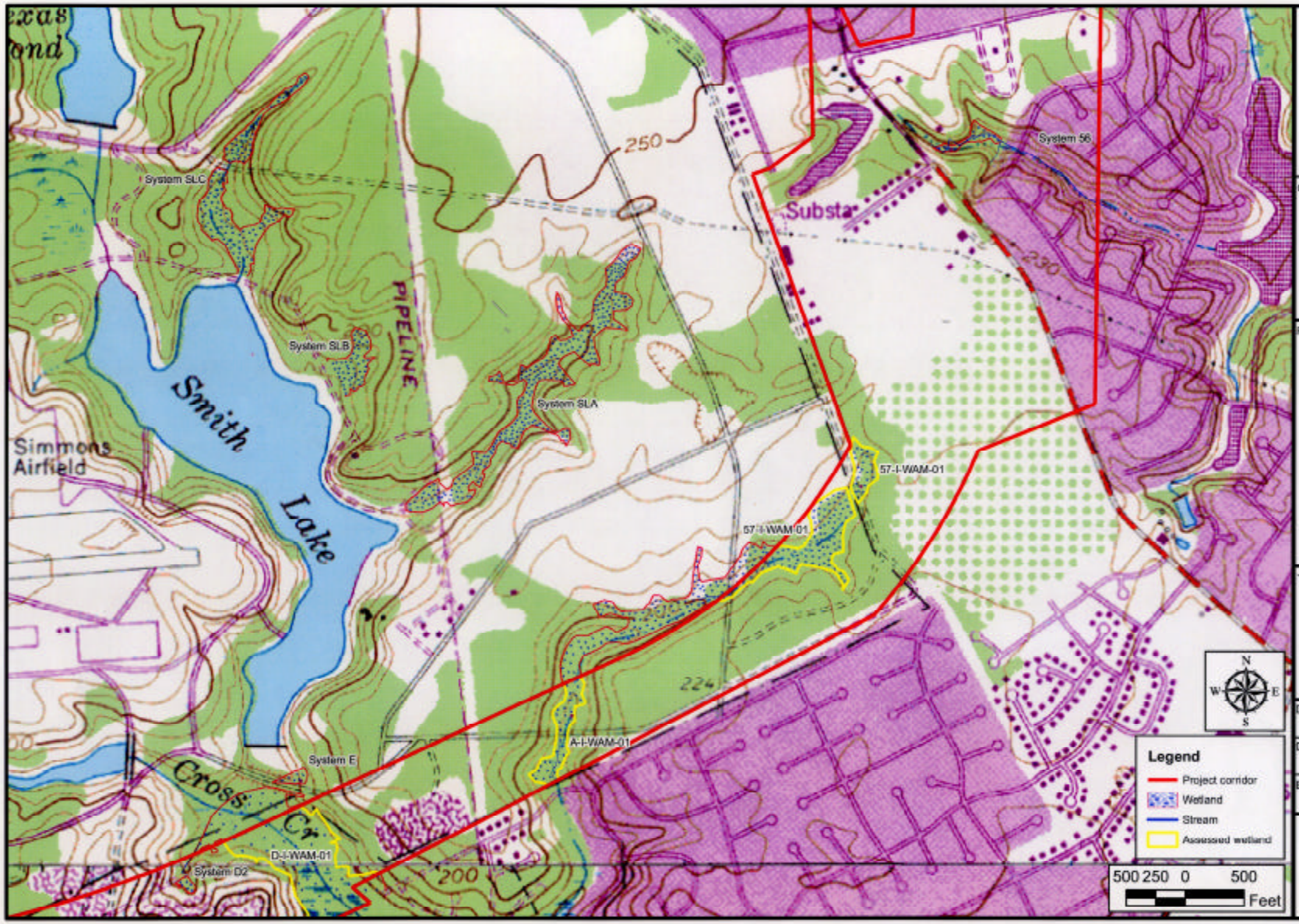
Title:

Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.:
06-296.02

FIGURE
2



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WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

2

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	57-I-WAM01	**Date**	9/7/07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Cross Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.133862, -78.909867

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Road Causeway through wetland, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☐ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☒C	☒C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☒B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☒C	10 to 30% impervious surfaces
☒D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☐A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☒E	☒E	☒E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

- ☐A Wetland type is the full extent (≥90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☒No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

- ☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
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☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

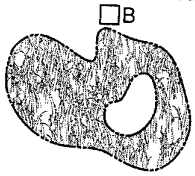
☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A

☐B



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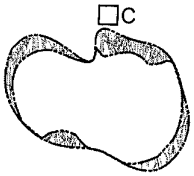
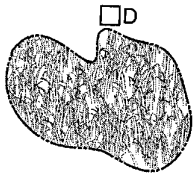


☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	57-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**MEDIUM**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	A-I-WAM01	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Cross Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.128225, -78.918120

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Road Causeway through wetland with culvert, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☒B	☒B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☒B	☒B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)
☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.
☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?
☒Yes ☐No

Is stream or other open water sheltered or exposed?
☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☐A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☒C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☒B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

- ☐A Wetland type is the full extent (≥90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

- ☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☒A	☒A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

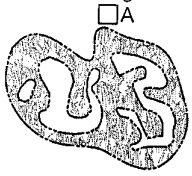
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

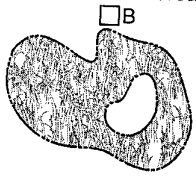
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

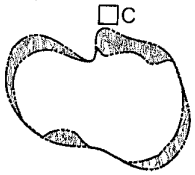
☐A



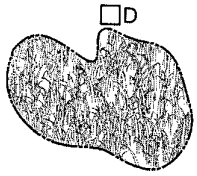
☐B



☐C



☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	A-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

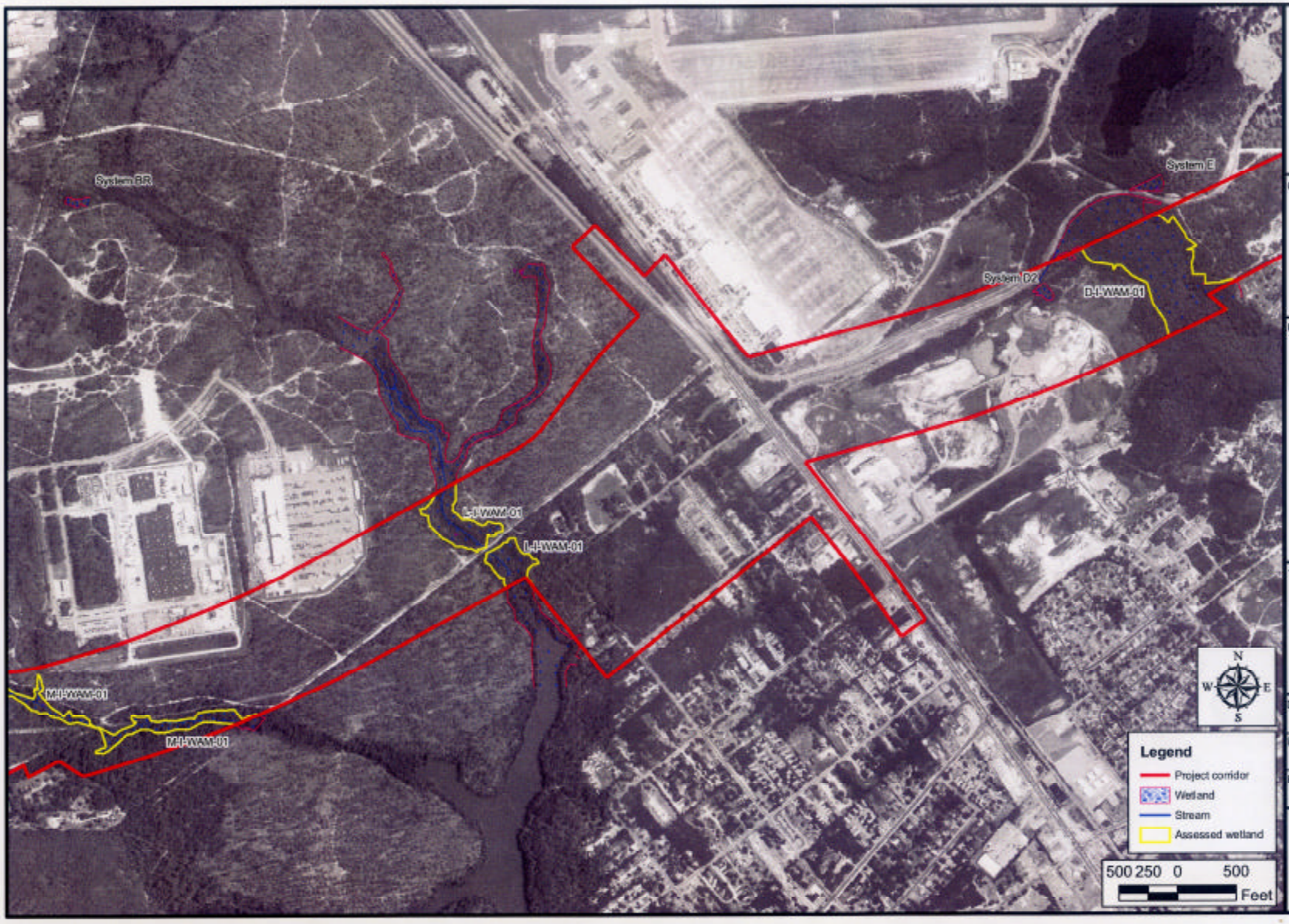
Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

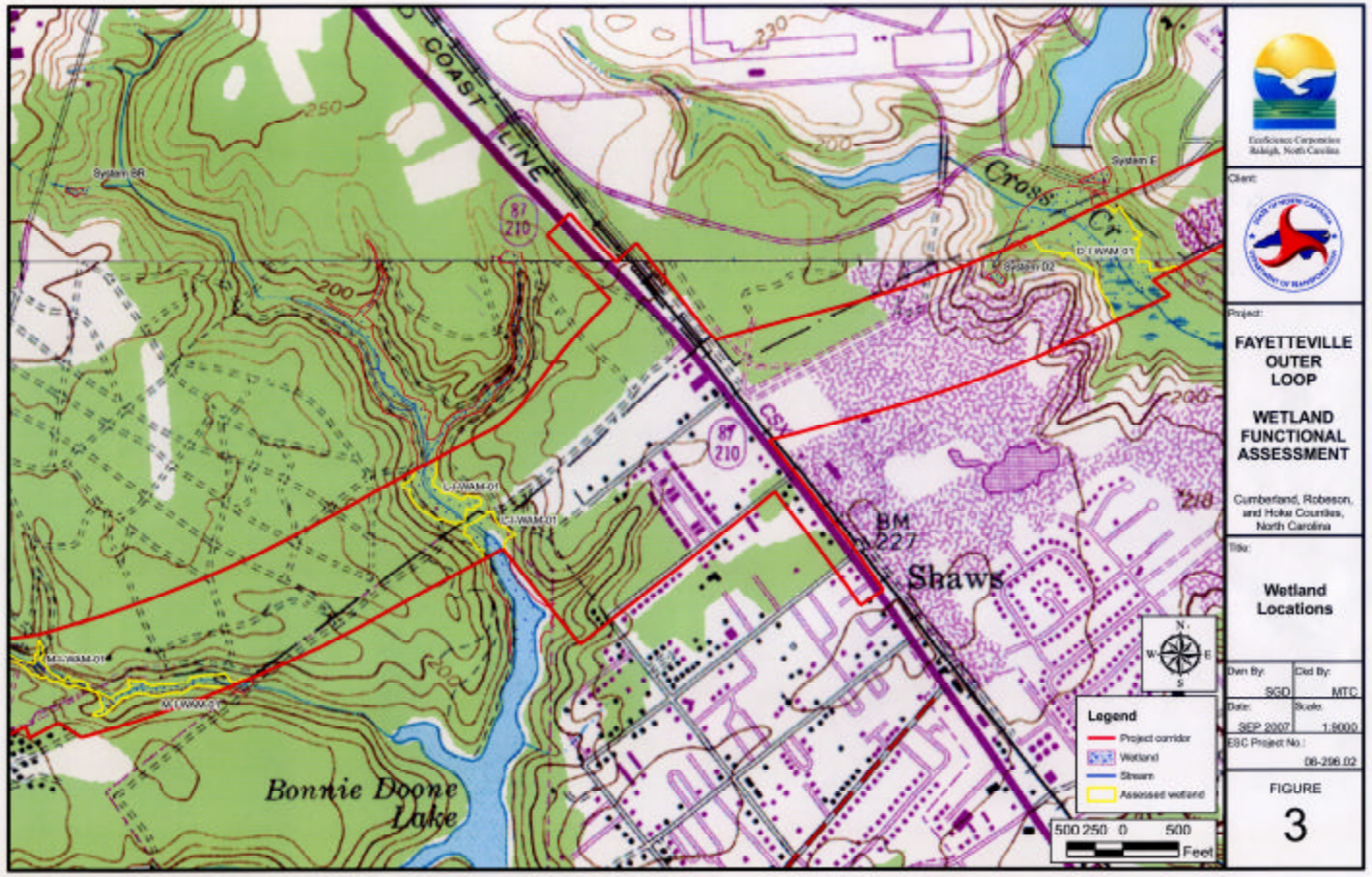
Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

3



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.:
06-296.02

FIGURE
3

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	D-I-WAM01	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Cross Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ **Yes** ☒ **No**	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.126296, -78.924810

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☒ Yes ☐ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☒B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☒A	☒A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☒B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☒C	10 to 30% impervious surfaces
☒D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)
☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.
☐ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?
☐Yes ☐No

Is stream or other open water sheltered or exposed?
☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☐A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☒B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥ 500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☐B No artificial edge within 150 feet in four to seven directions
- ☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☒A	☒A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☒C	☒C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☒C Most canopy trees are < 6-inches DBH or no trees.

20. Large Woody Debris – wetland type condition metric

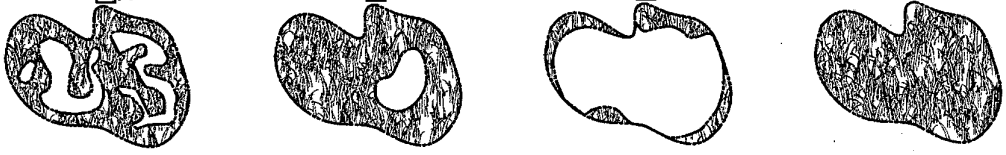
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	D-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**LOW**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**MEDIUM**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	L-I-WAM01	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bonnie Doone Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.119600, -78.945626

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Fire road causeway through middle of wetland, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☒B	☒B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☒C	☒C	10 to 30% impervious surfaces
☒D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)
☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.
☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?
☒Yes ☐No

Is stream or other open water sheltered or exposed?
☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☒F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

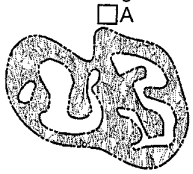
20. **Large Woody Debris – wetland type condition metric**

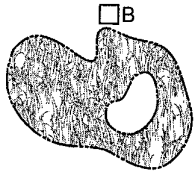
Include both man-made and natural debris piles.

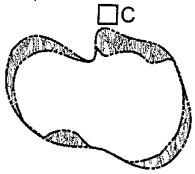
☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

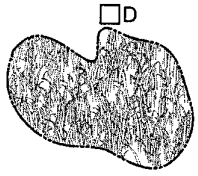
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A 

☐B 

☐C 

☐D 

22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	L-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

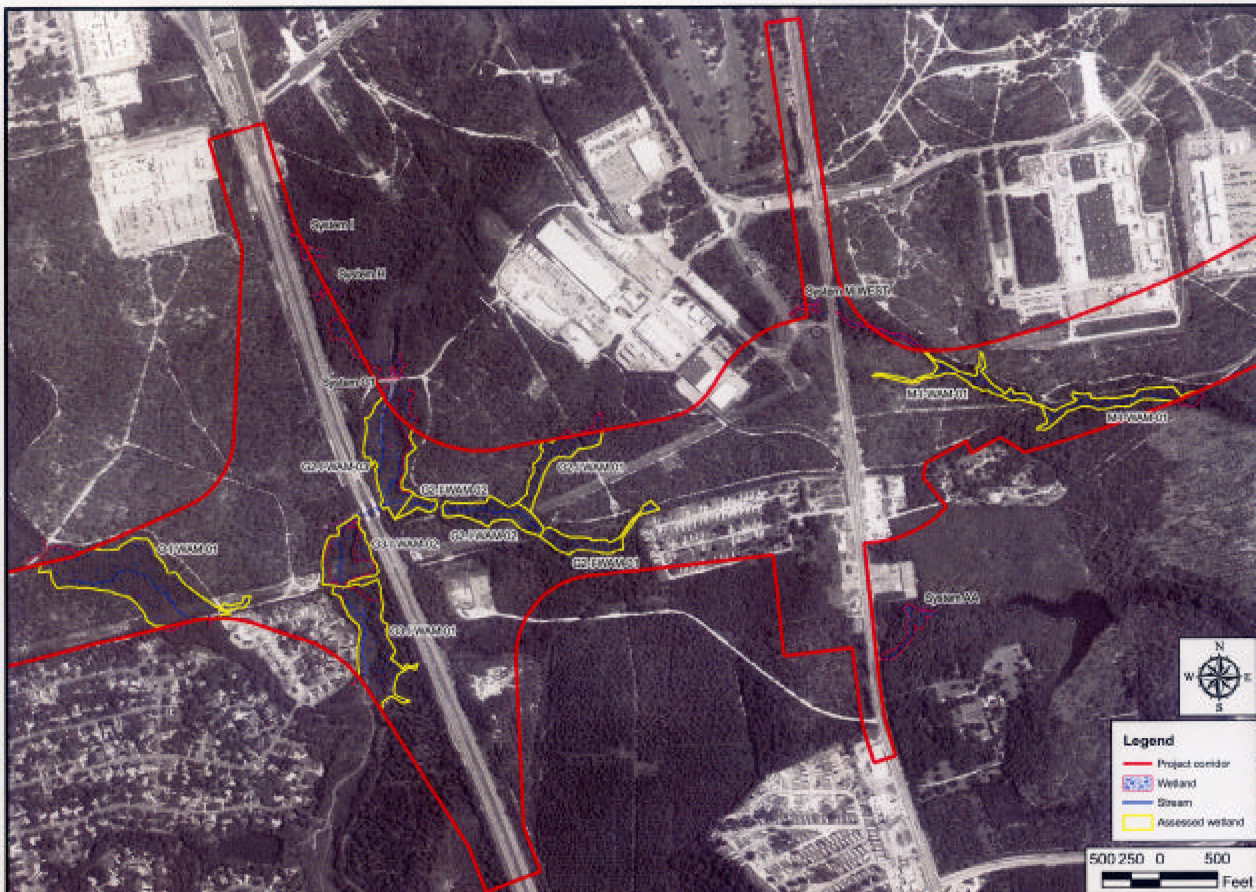
Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**MEDIUM**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**



EnviScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

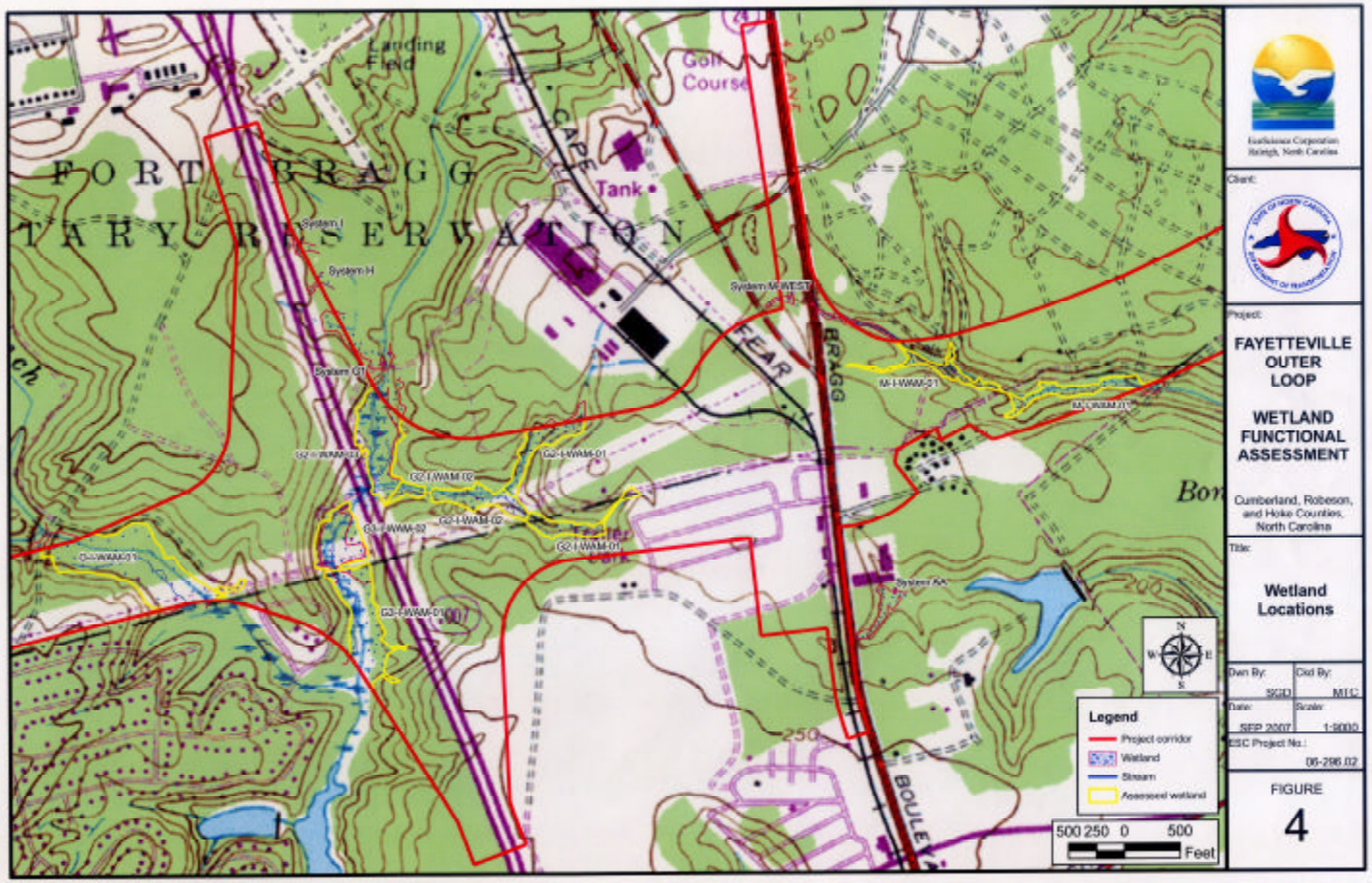
Title:

Wetland Locations

Dwn By: SGD	Ckd By: MTC
Date: SEP 2007	Scale: 1:9000
ESC Project No.: 06-296.02	

FIGURE

4



Earthsciences Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Dwn By:	Chd By:
SCD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.:
06-286.02

FIGURE
4

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	M-I-WAM01	**Date**	9/7/07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bonnie Doone Lake
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.114734, -78.956196

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Road adjacent to wetland, vines and shrubs filling in from available light, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☒C	☒C	☒C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐ ≤15-feet wide ☒> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☐A Sediment deposition is not excessive, but at approximately natural levels.
☒B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☒F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☒B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

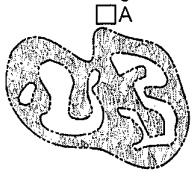
20. **Large Woody Debris – wetland type condition metric**

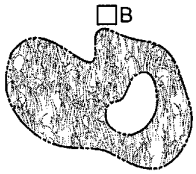
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A 

☐B 

☐C 

☐D 

22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	M-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**MEDIUM**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**MEDIUM**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G2-I-WAM01	**Date**	9/7/07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.112232, -78.970543

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Fire Road Cuts through wetland, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

- ☐ Anadromous fish
- ☐ Federally protected species or State endangered or threatened species
- ☐ NCDWQ riparian buffer rule in effect
- ☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
- ☒ Publicly owned property
- ☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- ☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- ☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

- ☒ Blackwater
- ☐ Brownwater
- ☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☒C	☒C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☐A Sandy soil
- ☒B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☒C	☒C	☒C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☐A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☒F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☒B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☒A	☒A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

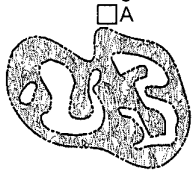
20. **Large Woody Debris – wetland type condition metric**

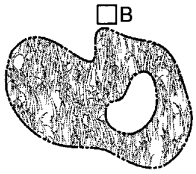
Include both man-made and natural debris piles.

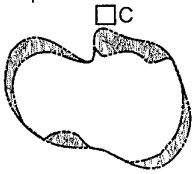
☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A 

☐B 

☐C 

☐D 

22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	G2-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**MEDIUM**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**MEDIUM**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G2-I-WAM02	**Date**	9/7/07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	AS, RA EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.112068, -78.972705

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Fire Road and fence cuts through wetland, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☒C	☒C	☒C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☒C	☒C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☒F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☒A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

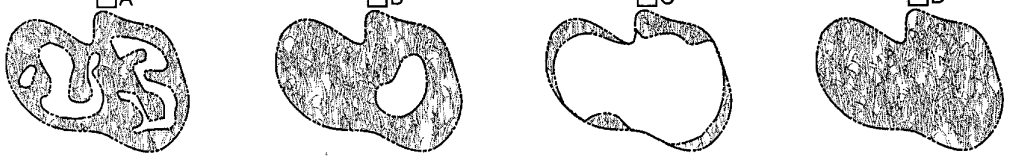
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	G2-I-WAM02	Date of Assessment	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G2-I-WAM03	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.113715, -78.974279

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Fire Road cuts through wetland, beaver impacted, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☒ Yes ☐ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☒C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☒A	☒A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☒C	☒C	☒C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐≤15-feet wide ☒> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☒E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☒B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

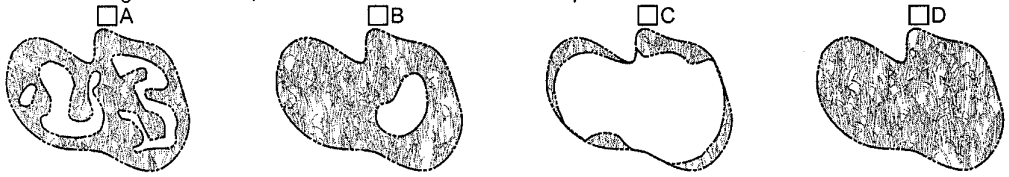
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	G2-I-WAM03	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**LOW**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**LOW**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**MEDIUM**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**MEDIUM**

Overall Wetland Rating **MEDIUM**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G3-I-WAM01	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.111304, -78.975669

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Four lane highway causeway, utility crossing, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☒ Yes ☐ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☒C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☒A	☒A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☐A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☒C	☒C	☒C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐≤15-feet wide ☒> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☒G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

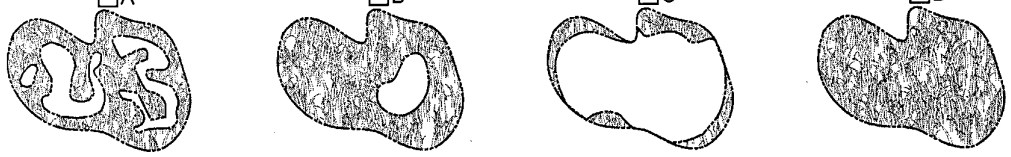
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	G3-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**LOW**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**MEDIUM**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G3-I-WAM02	**Date**	9/7/07
Wetland Type	Non-Tidal Freshwater Marsh	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.111069, -78.976471

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Beaver impacted, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☒ Yes ☐ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☒A	☒A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☒B	☒B	> 30% impervious surfaces without stormwater BMPs
☒C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☒C	☒C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☒F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☒Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☒A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☒A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☒C Most canopy trees are < 6-inches DBH or no trees.

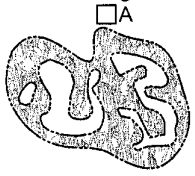
20. **Large Woody Debris – wetland type condition metric**

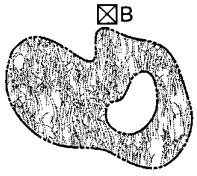
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A 

☒B 

☐C 

☐D 

22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	G3-I-WAM02	Date of Assessment	9/7/07
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

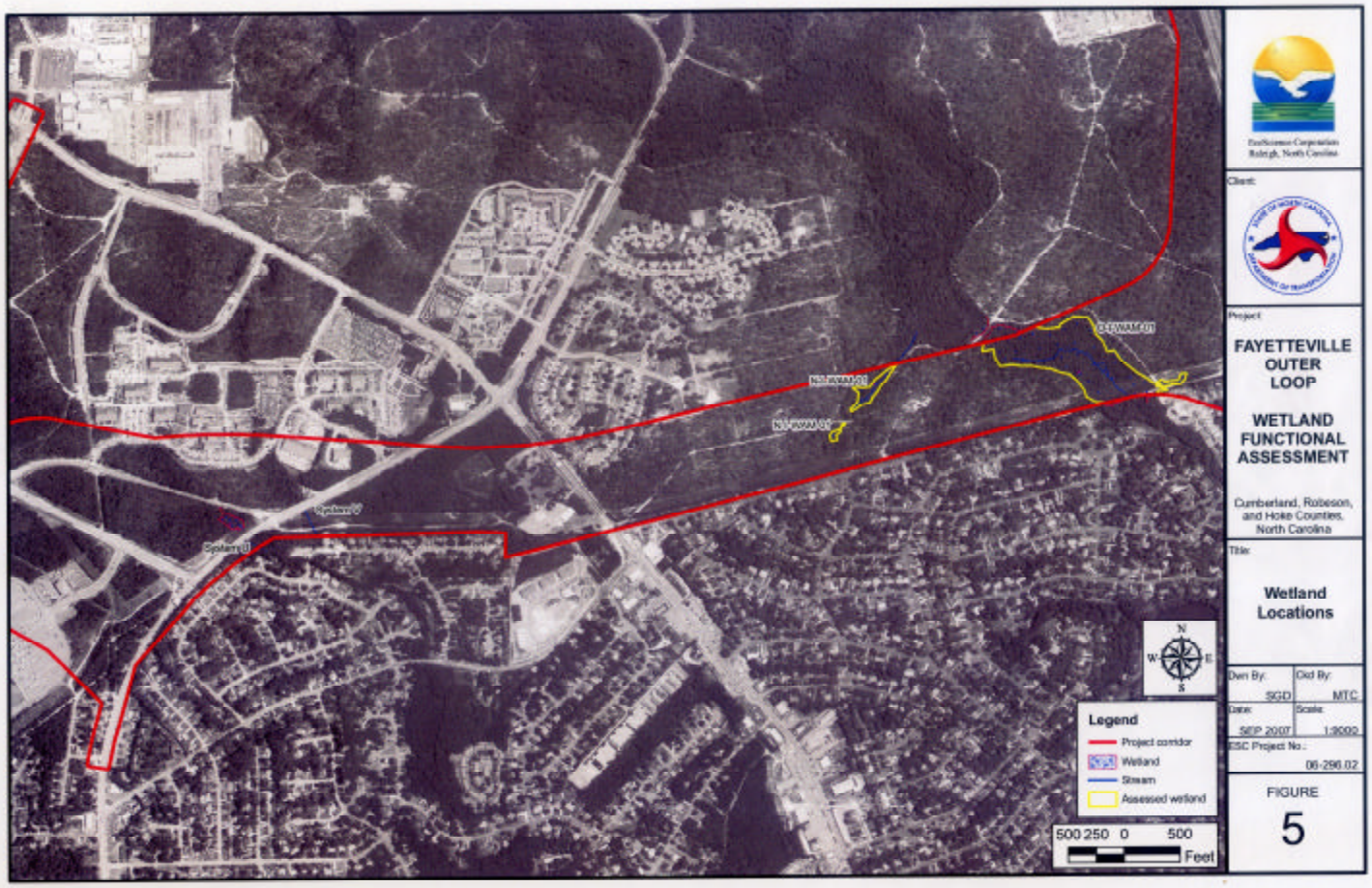
Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

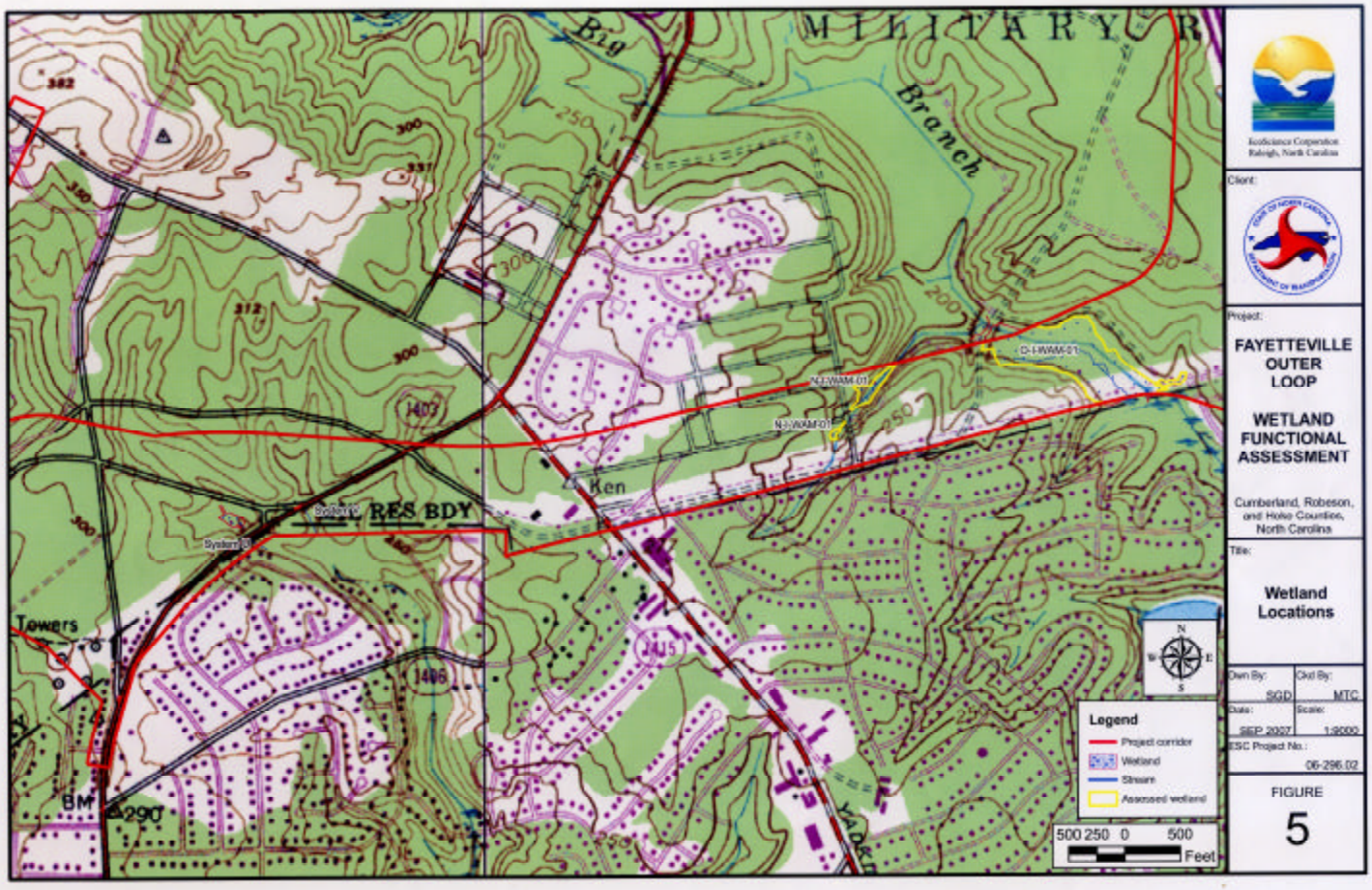
Wetland Locations

Dwn By:	Chkd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:3000

ESC Project No.: 06-296.02

FIGURE

5



Ecoscience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Dwn By:	Chd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

5

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	O-I-WAM01	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ **Yes** ☒ **No**	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.110646, -78.981095

Evidence of stressors affecting the assessment area (may not be within the assessment area)

Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.

Flashy Hydrology, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- ☐ Anadromous fish
- ☐ Federally protected species or State endangered or threatened species
- ☐ NCDWQ riparian buffer rule in effect
- ☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
- ☒ Publicly owned property
- ☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- ☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- ☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

- ☒ Blackwater
- ☐ Brownwater
- ☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☒C	☒C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☐A Sandy soil
- ☒B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☐A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☒C	☒C	10 to 30% impervious surfaces
☒D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☒E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☒C Most canopy trees are < 6-inches DBH or no trees.

20. Large Woody Debris – wetland type condition metric

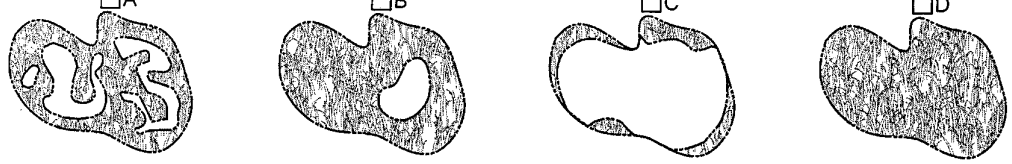
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	O-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**MEDIUM**
Water Quality	Pathogen Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**MEDIUM**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**LOW**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**MEDIUM**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	N-I-WAM01	**Date**	9/7/07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Big Branch
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ **Yes** ☒ **No**	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.109776, -78.987825

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.
Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☒B	☒B	☒B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☒G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☒A	☐A	≥500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☒A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☒C	☒C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

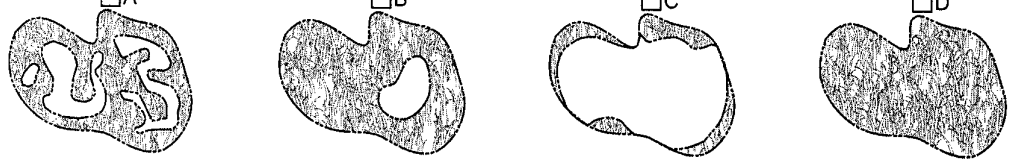
Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A ☐B ☐C ☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	N-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

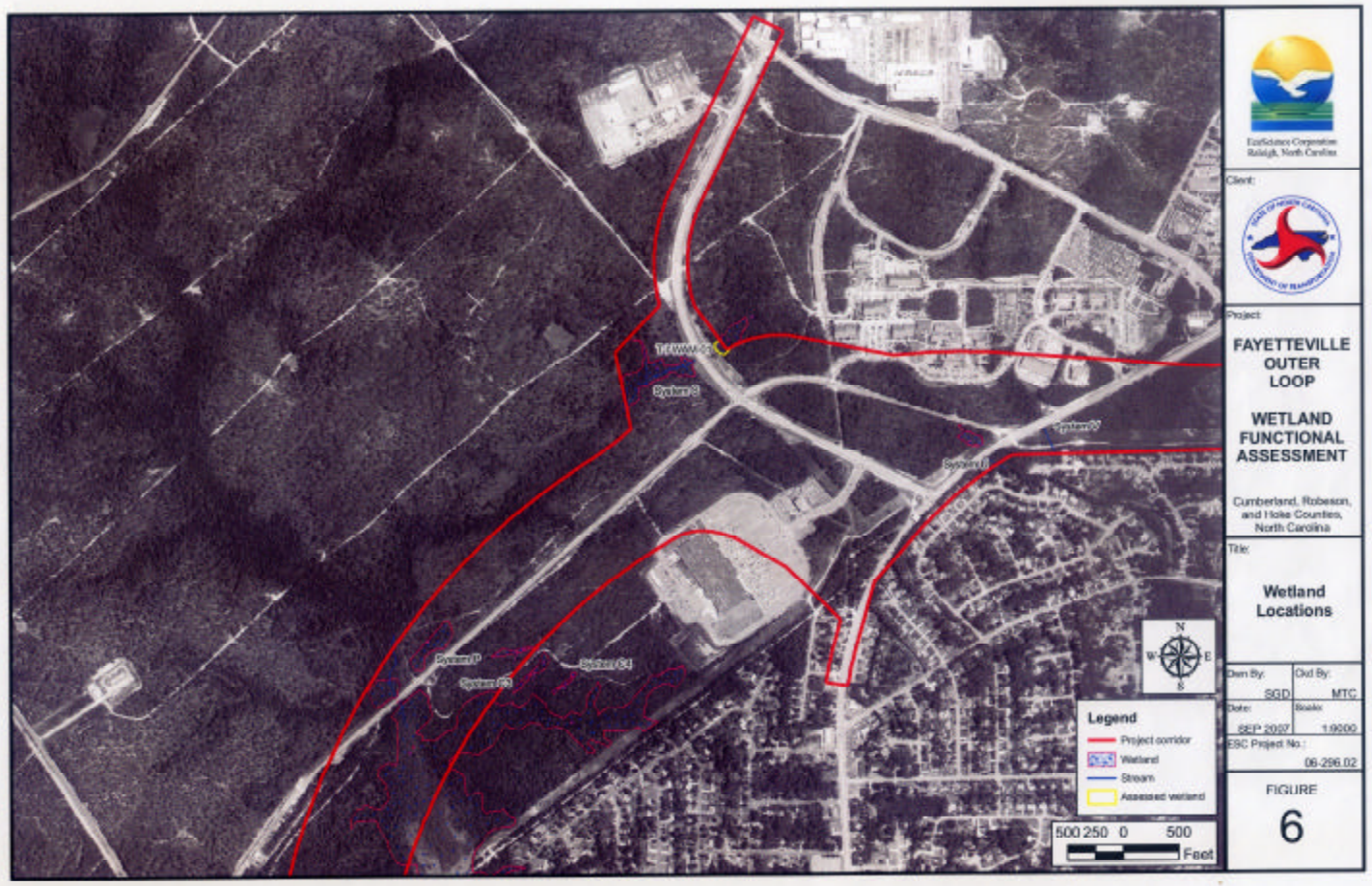
Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**LOW**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**MEDIUM**

Overall Wetland Rating **HIGH**



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

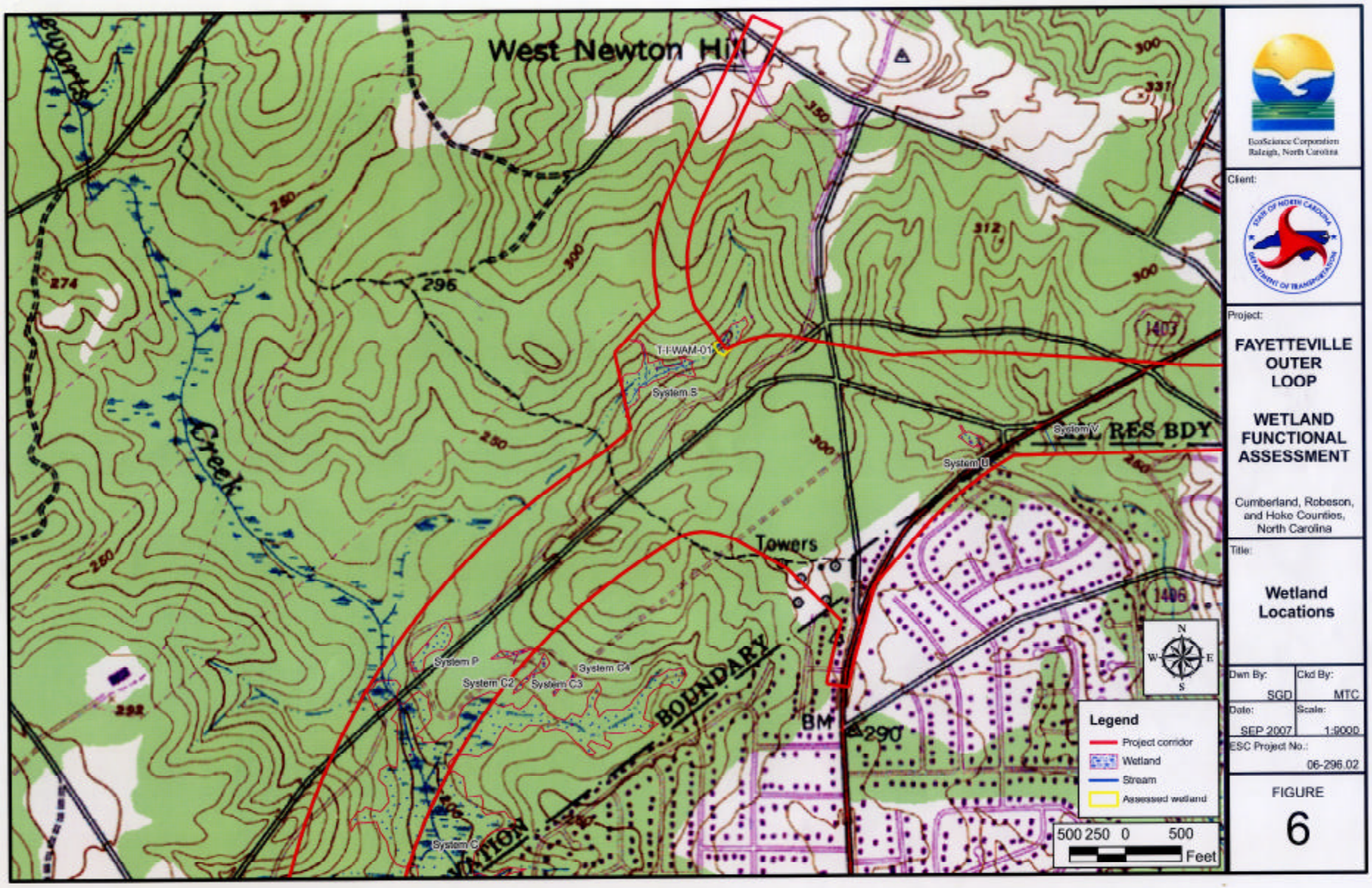
Title:

Wetland Locations

Dwn By:	Chd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.:
06-296.02

FIGURE
6



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

6

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	T-I-WAM01	**Date**	9/7/07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	AS, RA/ EcoScience
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Stewart's Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.108764, -79.014783

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☒ Yes ☐ No

Describe effects of stressors that are present.
Man-made berm with rip rap and clay fill has caused ponding of water, Fort Bragg

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☒ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☐A	☒A	Not severely altered
☒B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☒C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☒C	☒C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☐A Sandy soil
- ☒B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☐E Soil ribbon < 1 inch
- ☒F Soil ribbon ≥1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☒C	☒C	☒C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7.5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☐ ≤15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☐A	≥100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. **Inundation Duration – assessment area condition metric**

Answer for assessment area dominant landform.

☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

Consider recent deposition only (no plant growth since deposition).

☒A Sediment deposition is not excessive, but at approximately natural levels.
☐B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. **Wetland Size – wetland type/wetland complex condition metric**

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☒G	☒G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0.5 acre
☐J	☐J	☐J	From 0.01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. **Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)**

☐A Wetland type is the full extent (≥90%) of its natural landscape size.
☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥500 acres
☐B	☒B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

☐A No artificial edge within 150 feet in all directions
☐B No artificial edge within 150 feet in four to seven directions
☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)**

☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. **Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)**

☐A Vegetation diversity is high and is composed primarily of native species.
☐B Vegetation diversity is low or has > 10% cover of exotics.
☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☐B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH.
☐C Most canopy trees are < 6-inches DBH or no trees.

20. **Large Woody Debris – wetland type condition metric**

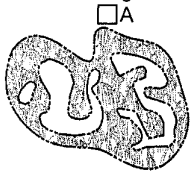
Include both man-made and natural debris piles.

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☐B Not A

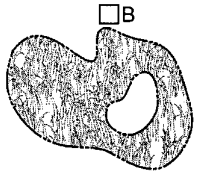
21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

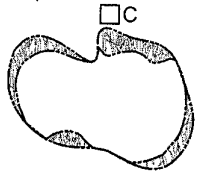
☐A



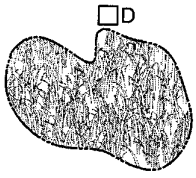
☐B



☐C



☐D



22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	T-I-WAM01	Date of Assessment	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA/ EcoScience

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Wetland is intensively managed (Y/N)	YES
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**LOW**
	Sub-surface Storage and Retention	Condition	**MEDIUM**
Water Quality	Pathogen Change	Condition	**LOW**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**LOW**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**LOW**
Water Quality	Condition	**MEDIUM**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**MEDIUM**

Overall Wetland Rating **MEDIUM**

EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

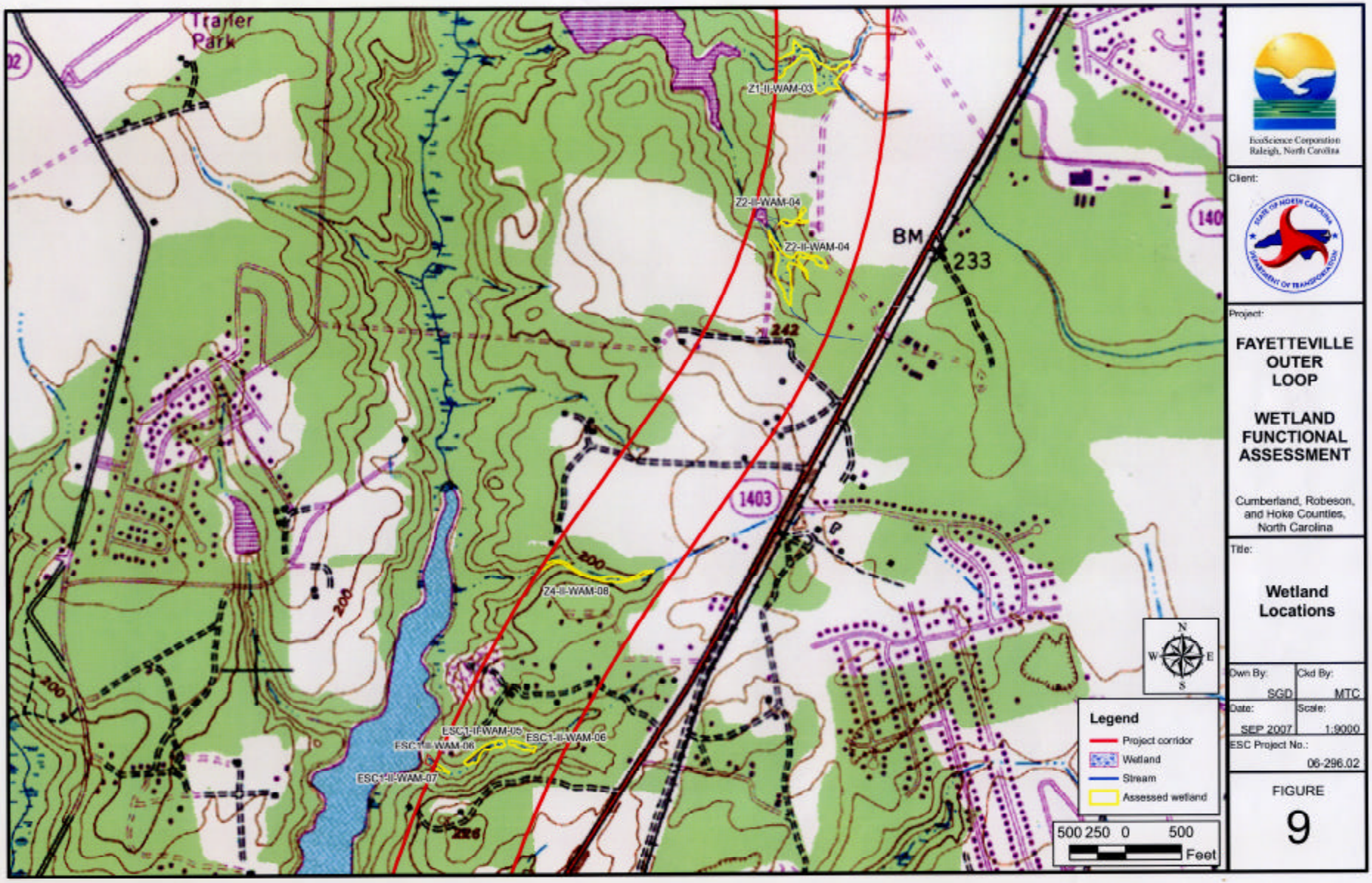
Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

9



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Own By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

9

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z1-II-WAM03	**Date**	9-6-07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	EcoScience MC/JW
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35 056307 -79.024511

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent Consider departure from reference, if appropriate, in recent past (for instance, within 10 years) Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc)
- Signs of vegetation stress (examples. vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present.

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT)

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- ☐A Sandy soil
- ☒B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☒K	☒K	☒K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

☒≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed

WT	WC	RB (if applicable)	
☐A	☐A	☒A	≥ 100 feet
☒B	☒B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment This metric evaluates three aspects of the wetland area. the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0 5 to < 1 acre
☒I	☒I	☒I	From 0.1 to < 0 5 acre
☐J	☐J	☐J	From 0.01 to < 0 1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥ 500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☒D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- ☒Yes ☐No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- ☒Yes ☐No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area
- ☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species
- ☐B Vegetation diversity is low or has > 10% cover of exotics
- ☐C Vegetation is dominated by exotic species.

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☐B Not A

19. Diameter Class Distribution – wetland type condition metric

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☐C Most canopy trees are < 6-inches DBH or no trees

20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☐B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A ☐B ☐C ☐D

22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Frames 9884 and 9885

NC WAM Wetland Rating Sheet

Wetland Site Name	Z1-II-WAM03	Date of Assessment	9-6-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience MC/JW

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
	Sub-surface Storage and Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
	Condition	MEDIUM
Habitat		

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z2-II-WAM04	**Date**	9-6-07
Wetland Type	Riverine Swamp Forest	**Assessor Name/Organization**	EcoScience JW/MC
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35 052466 -79 025985

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years) Noteworthy stressors include, but are not limited to the following

- Hydrological modifications (examples ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area.

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1 0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples. vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples. mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT)

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☒E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- ☐A Sandy soil
- ☒B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☐C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☒K	☒K	☒K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

☒≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☒C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition)

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☒F	From 5 to < 10 acres
☒G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0 5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0 5 acre
☐J	☐J	☐J	From 0.01 to < 0 1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
☐A	☐A	≥ 500 acres
☐B	☐B	From 100 to < 500 acres
☒C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☒No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☒C	☒C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☒A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☐C Most canopy trees are < 6-inches DBH or no trees

20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A

☐B

☐C

☐D

22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Frames 9886 and 9887 (Northern fringe) 9888-9892 (Southern fringe)

NC WAM Wetland Rating Sheet

Wetland Site Name	Z2-II-WAM04	Date of Assessment	9-6-07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	EcoScience JW/MC

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**MEDIUM**
Water Quality	Pathogen Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Soluble Change	Condition	**MEDIUM**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**LOW**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z4-II-WAM08	**Date**	9-6-07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	EcoScience JW/MC
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	34 044415 -79.031989

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent Consider departure from reference, if appropriate, in recent past (for instance, within 10 years) Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples. ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples mowing, clear-cutting, exotics, etc)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area Compare to reference wetland if applicable (see User Manual v1 0). If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT)

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☒A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples. industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☒N	☒N	☒N	Little or no opportunity Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width

☒≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☒A	☒A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☒F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☒B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition)

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes An observed beaver pond forms a boundary if it extends across the entire width of the floodplain Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☐B	☒B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☒H	☐H	☒H	From 0 5 to < 1 acre
☐I	☐I	☐I	From 0 1 to < 0 5 acre
☐J	☐J	☐J	From 0 01 to < 0 1 acre
☐K	☐K	☐K	< 0 01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☐A	☐A	≥ 500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☒A	☒A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH); many large trees (> 12-inches DBH) are present
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☒C Most canopy trees are < 6-inches DBH or no trees

20. Large Woody Debris – wetland type condition metric

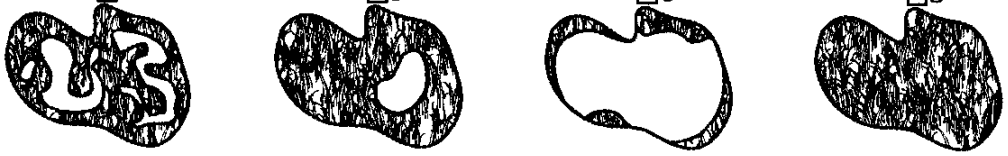
Include both man-made and natural debris piles

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A ☐B ☐C ☐D



22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Frames 9900 and 9901

NC WAM Wetland Rating Sheet

Wetland Site Name	Z4-II-WAM08	Date of Assessment	9-6-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience JW/MC

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

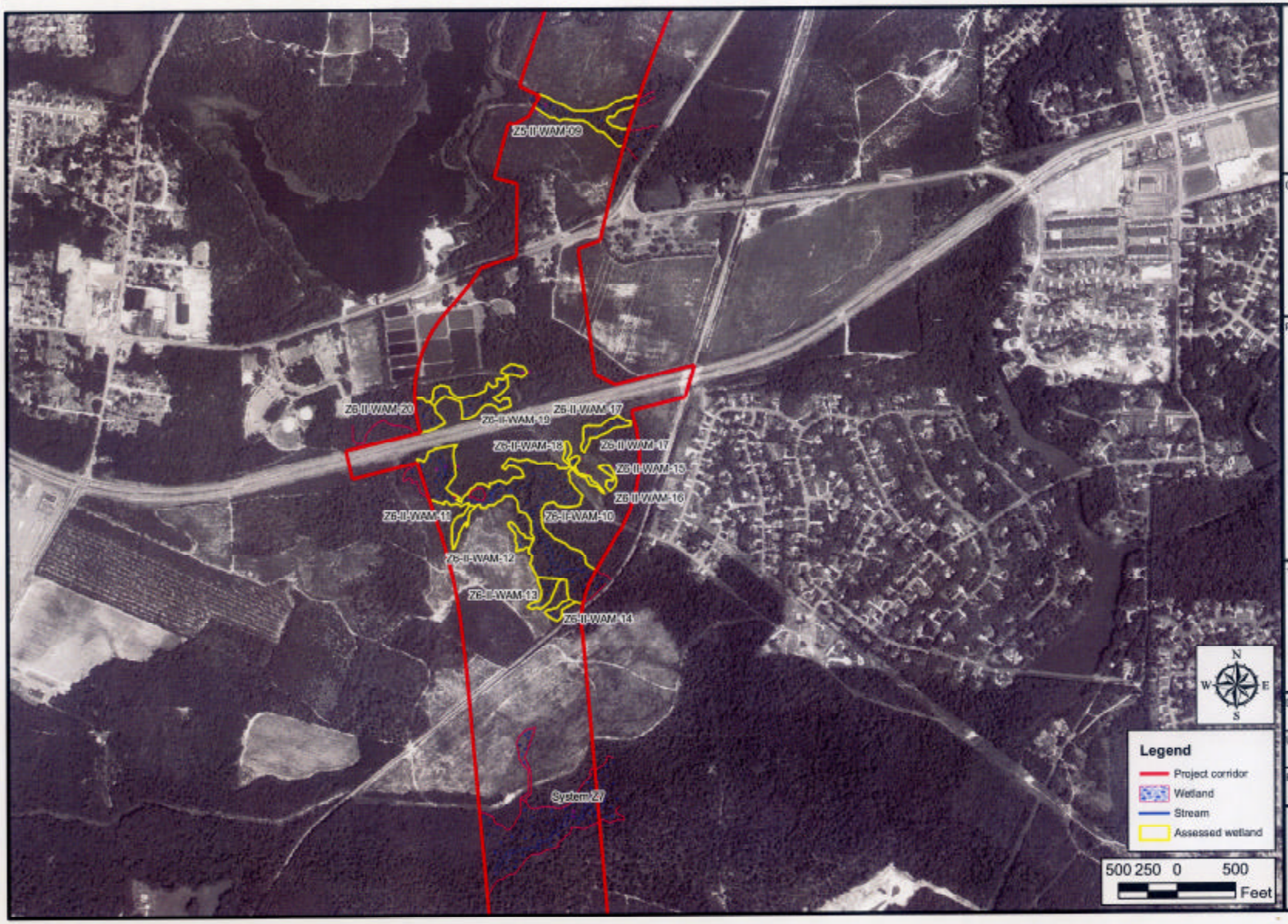
Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**LOW**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
	Condition	**HIGH**
Habitat		

Overall Wetland Rating **HIGH**



EcoScience Corporation
Raleigh, North Carolina

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

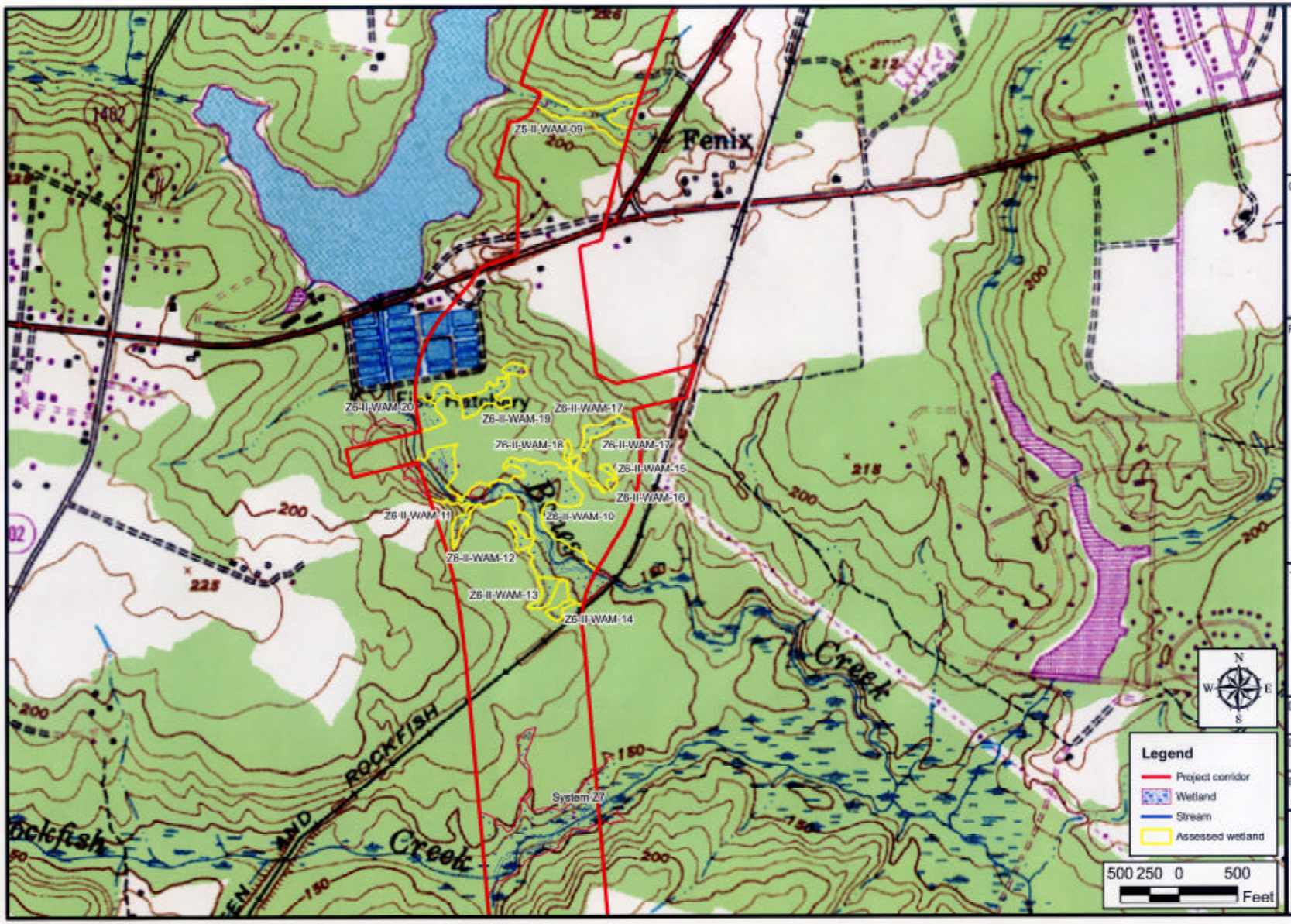
Wetland Locations

Dwn By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

10



EcoScience Corporation
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FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Own By:	Ckd By:
SGD	MTC
Date:	Scale:
SEP 2007	1:9000

ESC Project No.: 06-296.02

FIGURE

10

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z5-II-WAM09	**Date**	9-7-07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	EcoScience Allen and Cusack
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35 035441 -79 035612

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc)
- Surface and sub-surface discharges into the wetland (examples discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc)
- Signs of vegetation stress (examples vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area Compare to reference wetland if applicable (see User Manual v1 0). If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples. mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples. intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT)

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☒N	☒N	☒N	Little or no opportunity Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)
☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width
☒≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?
☒Yes ☐No

Is stream or other open water sheltered or exposed?
☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☒A	☒A	≥ 100 feet
☒B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☒B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition)

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☐B	☒B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☒G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0 1 to < 0 5 acre
☐J	☐J	☐J	From 0 01 to < 0 1 acre
☐K	☐K	☐K	< 0 01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☐A	☐A	≥ 500 acres
☒B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass

- ☐A No artificial edge within 150 feet in all directions
- ☐B No artificial edge within 150 feet in four to seven directions
- ☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species
- ☐B Vegetation diversity is low or has > 10% cover of exotics
- ☐C Vegetation is dominated by exotic species.

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present.
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☐C Most canopy trees are < 6-inches DBH or no trees.

20. Large Woody Debris – wetland type condition metric

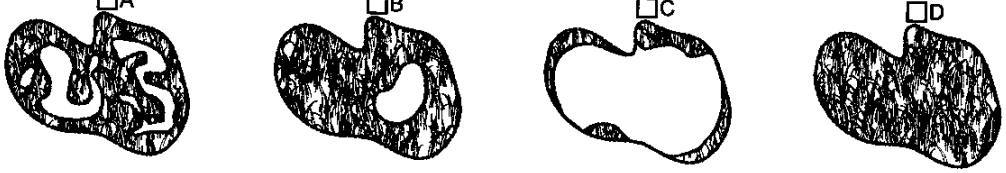
Include both man-made and natural debris piles

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A ☐B ☐C ☐D



22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N.C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	Z5-II-WAM09	Date of Assessment	9-7-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience Allen and Cusack

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence (Y/N)	**NO**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**MEDIUM**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM19	**Date**	9-7-07
Wetland Type	Seep	**Assessor Name/Organization**	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (decl-degrees)**	35 028825 -79.038614

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples. mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☐ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water Consider tidal flooding regime, if applicable

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☒E	☒E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☒G No peat or muck presence
- ☐H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☒M	☒M	☒M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

☐≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☒A	☐A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☒C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☒B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition)

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment This metric evaluates three aspects of the wetland area the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☒F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0 5 acre
☒J	☐J	☐J	From 0 01 to < 0 1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☐A	☐A	≥ 500 acres
☐B	☒B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☒E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☒No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass

- ☒A No artificial edge within 150 feet in all directions
- ☐B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics
- ☐C Vegetation is dominated by exotic species

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☒C	☒C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☒C Most canopy trees are < 6-inches DBH or no trees

20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A ☐B ☐C ☐D

22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Photos 9937-9939

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM19	Date of Assessment	9-7-07
Wetland Type	Seep	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM20	**Date**	9-7-07
Wetland Type	Bottomland Hardwood Forest	**Assessor Name/Organization**	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35 028515, -79 040211

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc)
- Surface and sub-surface discharges into the wetland (examples. discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area Compare to reference wetland if applicable (see User Manual v1.0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☐A	☒A	Not severely altered
☒B	☐B	Severely altered over most of the assessment area (ground surface alteration examples vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples. mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water Consider tidal flooding regime, if applicable

Surf	Sub	
☐A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
☒C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples. intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT)

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☒C	☒C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc

Surf	Sub	
☐A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains.

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☒G	☒G	☒G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

☐≤ 15-feet wide ☒> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels.
- ☐B Sediment deposition is excessive, but not overwhelming the wetland.
- ☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment This metric evaluates three aspects of the wetland area. the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes An observed beaver pond forms a boundary if it extends across the entire width of the floodplain Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☒F	☒F	☒F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0 1 to < 0 5 acre
☐J	☐J	☐J	From 0 01 to < 0 1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☐A	☐A	≥ 500 acres
☐B	☒B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☒E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☐B No artificial edge within 150 feet in four to seven directions
- ☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☒B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species
- ☐B Vegetation diversity is low or has > 10% cover of exotics
- ☐C Vegetation is dominated by exotic species

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☒B	☒B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☒A	☒A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☐B	☐B	Moderate density herb layer
☒C	☒C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present.
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☒C Most canopy trees are < 6-inches DBH or no trees

20. Large Woody Debris – wetland type condition metric

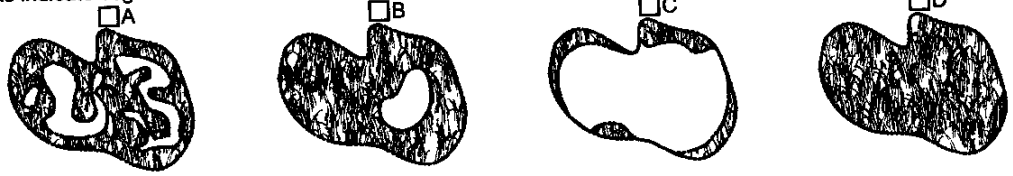
Include both man-made and natural debris piles

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A ☐B ☐C ☐D



22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Photos 9940-9942

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM20	Date of Assessment	9-7-07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**MEDIUM**
Water Quality	Pathogen Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**YES**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**LOW**
	Landscape Patch Structure	Condition	**LOW**
	Vegetation Composition	Condition	**MEDIUM**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**LOW**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM10	**Date**	9-7-07
Wetland Type	Bottomland Hardwood Forest	**Assessor Name/Organization**	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35 027068 -79 040021

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following

- Hydrological modifications (examples ditches, dams, beaver dams, dikes, berms, ponds, etc)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present
US 401 at upstream end of assessment area Runoff from road ditched to assessment area

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1 0) If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples· vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT)

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☒D	☒D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
☐A	☐A	Little or no evidence of pollutants or discharges entering the assessment area
☒B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☒C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☐M	☐M	☐M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

☐≤ 15-feet wide ☒> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed

WT	WC	RB (if applicable)	
☒A	☒A	☒A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition)

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column

WT	WC	FW (if applicable)	
☐A	☐A	☐A	≥ 500 acres
☒B	☒B	☒B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0 5 to < 1 acre
☐I	☐I	☐I	From 0.1 to < 0 5 acre
☐J	☐J	☐J	From 0 01 to < 0 1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☒A	☐A	≥ 500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species
- ☐B Vegetation diversity is low or has > 10% cover of exotics
- ☐C Vegetation is dominated by exotic species.

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☐A	☐A	Dense herb layer
☒B	☒B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☒A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability)
☐B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
☒B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☐C Most canopy trees are < 6-inches DBH or no trees.

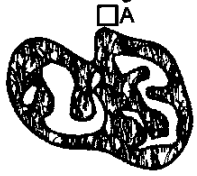
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles
☒A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☐B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water.

☐A



☐B

☐C

☐D

22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM10	Date of Assessment	9-7-07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	YES
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	
Water Quality	Pathogen Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**MEDIUM**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM12	**Date**	9-7-07
Wetland Type	Seep	**Assessor Name/Organization**	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35 022510 -79 037557

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following

- Hydrological modifications (examples ditches, dams, beaver dams, dikes, berms, ponds, etc)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples. vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☐ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. **Ground Surface Condition/Vegetation Condition – assessment area condition metric**

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area Compare to reference wetland if applicable (see User Manual v1.0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. **Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric**

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. **Water Storage/Surface Relief – assessment area/wetland type condition metric**

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☐B	☐B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☒E	☒E	Depressions able to pond water < 3-inches deep

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☐D	☐D	☐D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☒M	☒M	☒M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☐Yes ☒No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

☐≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☐Yes ☐No

Is stream or other open water sheltered or exposed?

☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable) Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☐A	☐A	≥ 100 feet
☐B	☐B	☐B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☒G	☒G	☒G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
- ☒B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition)

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
☐A	☒A	☐A	≥ 500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☐H	☐H	☐H	From 0 5 to < 1 acre
☒I	☐I	☐I	From 0 1 to < 0 5 acre
☐J	☐J	☐J	From 0.01 to < 0 1 acre
☐K	☐K	☐K	< 0 01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size
- ☐B Wetland type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☒A	☐A	≥ 500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☐Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☐B No artificial edge within 150 feet in four to seven directions
- ☒C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics.
- ☐C Vegetation is dominated by exotic species.

17. **Vegetative Structure – assessment area/wetland type condition metric**

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☐A	☐A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☒C	☒C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☐B	☐B	Moderate density mid-story/sapling layer
☒C	☒C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☐B	☐B	Moderate density shrub layer
☒C	☒C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. **Snags – wetland type condition metric**

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. **Diameter Class Distribution – wetland type condition metric**

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☒C Most canopy trees are < 6-inches DBH or no trees

20. **Large Woody Debris – wetland type condition metric**

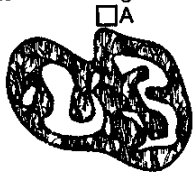
Include both man-made and natural debris piles

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability).
☒B Not A

21. **Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)**

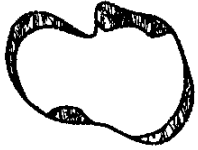
Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A



☐B

☐C



☐D

22. **Habitat Uniqueness – wetland type condition metric**

☐Yes ☒No Has the N.C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM12	Date of Assessment	9-7-07
Wetland Type	Seep	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	X
	Sub-surface Storage and Retention	Condition	X
Water Quality	Pathogen Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Particulate Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Physical Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM13	**Date**	9-7-07
Wetland Type	Headwater Wetland	**Assessor Name/Organization**	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	**Nearest Named Water Body**	Bones Creek
River Basin	Cape Fear	**USGS 8-Digit Catalogue Unit**	03030004
☐ Yes ☒ No	**Precipitation within 48 hrs?**	**Latitude/Longitude (deci-degrees)**	35.024241, -79.036853

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years) Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples ditches, dams, beaver dams, dikes, berms, ponds, etc)
- Surface and sub-surface discharges into the wetland (examples discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc)
- Habitat/plant community alteration (examples· mowing, clear-cutting, exotics, etc)

Is the assessment area intensively managed? ☐ Yes ☒ No

Describe effects of stressors that are present

Regulatory Considerations
Select all that apply to the assessment area

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Wetland adjacent to or associated stream drains to a Primary Nursery Area
☐ Publicly owned property
☐ N.C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ N.C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community

What type of natural stream is associated with the wetland, if any? (Check all that apply)

☒ Blackwater
☐ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area Compare to reference wetland if applicable (see User Manual v1 0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

GS	VS	
☒A	☒A	Not severely altered
☐B	☐B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water Consider tidal flooding regime, if applicable.

Surf	Sub	
☒A	☒A	Water storage capacity and duration are not altered.
☐B	☐B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
☐C	☐C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

Check a box in each column Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
☐A	☐A	> 50% of the wetland type with depressions able to pond water > 2 feet
☒B	☒B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
☐C	☐C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
☐D	☐D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
☐E	☐E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- ☐A Sandy soil
- ☐B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- ☒C Predominantly characterized by other, mineral soil (no mottling)
- ☐D Gleyed mineral soil (F2, S4)
- ☒E Soil ribbon < 1 inch
- ☐F Soil ribbon ≥ 1 inch
- ☐G No peat or muck presence
- ☒H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- ☐I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

5. **Discharge into Wetland – opportunity metric**

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub) Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc

Surf	Sub	
☒A	☒A	Little or no evidence of pollutants or discharges entering the assessment area
☐B	☐B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
☐C	☐C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation)

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric involves a GIS effort with field adjustment Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M) Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont and 30 feet wide in the Mountains

WS	5M	2M	
☐A	☐A	☐A	> 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential)
☐B	☐B	☐B	> 30% impervious surfaces without stormwater BMPs
☐C	☐C	☐C	10 to 30% impervious surfaces
☒D	☒D	☒D	< 10% impervious surfaces
☐E	☐E	☐E	Old urban development (pink areas on USGS 7 5-minute quadrangles)
☐F	☐F	☐F	New adjacent development
☐G	☐G	☐G	Confined animal operations (or other local, concentrated source of pollutants)
☐H	☐H	☐H	≥ 20% coverage of pasture without riparian buffer
☐I	☐I	☐I	≥ 20% coverage of pasture with effective riparian buffer
☐J	☐J	☐J	≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer
☐K	☐K	☐K	≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer
☐L	☐L	☐L	≥ 20% coverage of maintained grass/herb
☒M	☒M	☒M	Silvicultural land with disturbance < 5 years old
☐N	☐N	☐N	Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area.

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

☒Yes ☐No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

☒≤ 15-feet wide ☐> 15-feet wide ☐Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

☒Yes ☐No

Is stream or other open water sheltered or exposed?

☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic

☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system Make buffer judgment based on dominant landscape feature Record a note if a portion of the buffer has been removed or disturbed.

WT	WC	RB (if applicable)	
☐A	☒A	☐A	≥ 100 feet
☒B	☐B	☒B	From 80 to < 100 feet
☐C	☐C	☐C	From 50 to < 80 feet
☐D	☐D	☐D	From 40 to < 50 feet
☐E	☐E	☐E	From 30 to < 40 feet
☐F	☐F	☐F	From 15 to < 30 feet
☐G	☐G	☐G	From 5 to < 15 feet
☐H	☐H	☐H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
- ☐B Evidence of saturation, without evidence of inundation
- ☐C Evidence of long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ☒A Sediment deposition is not excessive, but at approximately natural levels
- ☐B Sediment deposition is excessive, but not overwhelming the wetland
- ☐C Sediment deposition is excessive and is overwhelming the wetland

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment This metric evaluates three aspects of the wetland area the size of the wetland type (WT), the size of the contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes An observed beaver pond forms a boundary if it extends across the entire width of the floodplain Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column

WT	WC	FW (if applicable)	
☐A	☒A	☒A	≥ 500 acres
☐B	☐B	☐B	From 100 to < 500 acres
☐C	☐C	☐C	From 50 to < 100 acres
☐D	☐D	☐D	From 25 to < 50 acres
☐E	☐E	☐E	From 10 to < 25 acres
☐F	☐F	☐F	From 5 to < 10 acres
☐G	☐G	☐G	From 1 to < 5 acres
☒H	☐H	☐H	From 0.5 to < 1 acre
☐I	☐I	☐I	From 0 1 to < 0.5 acre
☐J	☐J	☐J	From 0 01 to < 0.1 acre
☐K	☐K	☐K	< 0.01 acre

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Wetland type is the full extent (≥ 90%) of its natural landscape size.
- ☐B Wetland type is < 90% of the full extent of its natural landscape size

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
☒A	☐A	≥ 500 acres
☐B	☐B	From 100 to < 500 acres
☐C	☐C	From 50 to < 100 acres
☐D	☐D	From 10 to < 50 acres
☐E	☐E	< 10 acres
☐F	☐F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

☐Yes	☐No	Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
☒Yes	☐No	Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- ☐A No artificial edge within 150 feet in all directions
- ☒B No artificial edge within 150 feet in four to seven directions
- ☐C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for marshes and Pine Flat)

- ☒A Vegetation is close to reference condition in species present and their proportions Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata
- ☐C Vegetation severely altered from reference in composition Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species.
- ☐B Vegetation diversity is low or has > 10% cover of exotics
- ☐C Vegetation is dominated by exotic species

17. Vegetative Structure – assessment area/wetland type condition metric

☒ **Vegetation present**

Evaluate percent coverage of vegetation for marshes only

☐A ≥ 25% coverage of vegetation
☐B < 25% coverage of vegetation

Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

AA	WT	
☒A	☒A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
☐B	☐B	Canopy present, but opened more than natural gaps
☐C	☐C	Canopy sparse or absent
☐A	☐A	Dense mid-story/sapling layer
☒B	☒B	Moderate density mid-story/sapling layer
☐C	☐C	Mid-story/sapling layer sparse or absent
☐A	☐A	Dense shrub layer
☒B	☒B	Moderate density shrub layer
☐C	☐C	Shrub layer sparse or absent
☒A	☒A	Dense herb layer
☐B	☐B	Moderate density herb layer
☐C	☐C	Herb layer sparse or absent

☐ **Vegetation absent**

18. Snags – wetland type condition metric

☐A Large snags (more than one) are present (> 12-inches DBH, or large relative to species present and landscape stability).
☒B Not A

19. Diameter Class Distribution – wetland type condition metric

☐A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
☐B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
☒C Most canopy trees are < 6-inches DBH or no trees

20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

☐A Large logs (more than one) are present (> 12-inches in diameter, or large relative to species present and landscape stability)
☒B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season Patterned areas indicate vegetated areas, while solid white areas indicate open water

☐A ☐B ☐C ☐D

22. Habitat Uniqueness – wetland type condition metric

☐Yes ☒No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes
Photos 9915-9917

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM13	Date of Assessment	9-7-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	**HIGH**
	Sub-surface Storage and Retention	Condition	**HIGH**
Water Quality	Pathogen Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Particulate Change	Condition	**HIGH**
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Physical Change	Condition	**HIGH**
		Condition/Opportunity	**HIGH**
		Opportunity Presence (Y/N)	**NO**
	Pollution Change	Condition	X
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**HIGH**
	Vegetation Composition	Condition	**HIGH**
	Uniqueness	Condition	**NO**

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	**HIGH**
Water Quality	Condition	**HIGH**
	Condition/Opportunity	**HIGH**
	Opportunity Presence (Y/N)	**YES**
Habitat	Condition	**HIGH**

Overall Wetland Rating **HIGH**